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TREATISE  
ON THE  
MANAGEMENT OF INFANTS:

THE GENERAL PRINCIPLES OF THEIR  
DOMESTIC TREATMENT.

A  
TREATISE

ON THE  
MANAGEMENT OF INFANTS.

JOHN SYER, Surgeon.



TREATISE

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MANAGEMENT OF INFANTS



A  
TREATISE  
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CONTAINING

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DOMESTIC TREATMENT.

WITH

THE HISTORY AND METHOD OF CURE OF SOME OF THEIR  
MOST PREVALENT AND FORMIDABLE DISEASES.

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BY

JOHN SYER, SURGEON.

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" Though it is a maxim universally allowed, that a multitude of inhabitants is the firmest support of a state, yet the extraordinary mortality among children has been but little attended to by men of public spirit; it is thought a natural evil, and is therefore submitted to without examination."

*Gregory's Comparative View of the State and Faculties of Man.*

---

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1812.





# TREATISE

OF THE

## MANAGEMENT OF INFANTS.

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BY  
JOHN SYER, ESQ.

Though it is a treatise, and is intended to be a treatise, it is not a treatise in the  
proper sense of a treatise, but is a treatise in the popular sense of a treatise.  
It is intended to be a treatise in the popular sense of a treatise, and is intended  
to be a treatise in the popular sense of a treatise.

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## P R E F A C E.

---

THE subject to which I have ventured to call the public attention has for many years claimed a considerable share of my earnest solicitude; and now that the undertaking is completed, I feel disposed to doubt whether the rectitude of my intentions, and my zeal in the cause of suffering humanity, will compensate for the imperfection of my labours. Some consolation, however, I have derived from the truth of a sentiment expressed by a learned critic and divine, that “when we undertake any thing in an improved age, we may have confidence consistently with modesty; because our confidence is not in ourselves, but in the candour and indulgence of others\*.”

The ensuing work is intended to comprise two objects of instruction. The first

\* Dr. Hey's Introduction to Lectures in Divinity, Vol. I. chap. i. sect. 5.



part of the plan is devoted to a consideration of the remote causes of the derangement of the health of infants, with a view to the prevention of disease. The second has a reference to the history and treatment of individual diseases restricted to the term of childhood, which are of the most frequent occurrence, and most uniform in their appearance. On the present occasion I must avail myself of one very essential preliminary requisition, that the general reader will not be discouraged by the unavoidable association of medical with other topics; nor the professional student shrink from a perusal of the work, through a hasty anticipation of its being exclusively dedicated to the nursery. Although the difficulties in many parts of adapting medical instruction to the comprehension of the general reader are too obvious to be concealed, yet the attempt to reduce medical precepts to a certain share of popularity should not be treated as wholly chimerical; for the same objection will apply, with more or less force, to popular treatises on the general principles of law, agriculture, or astronomy, of which the elements at least may be expected with



facility and with advantage to be generally acquired.

Notwithstanding the subject of infantile infirmity has been apparently exhausted by the investigations of various writers of very unequal eminence, yet, in vindication of the present undertaking, I would hazard an opinion, that the different views which have been already exhibited, although not destitute of merit, have nevertheless been too superficial, or altogether deficient in principle. On this account many of them have been less edifying to the rational inquirer; and others which have taken a much wider range, have been almost wholly technical. It were better perhaps, as an ingenious physician has remarked upon another occasion, “that medicine, like other branches of natural knowledge, was brought from its hiding place, and exhibited in the simplicity of science and the nakedness of truth.”

The objects included in the following pages, although sufficiently interesting and important, yet constitute but an outline of the subject; in relation to public utility I trust however that the selection will be ap-



proved, whilst a more comprehensive survey might have created disgust or impatience. Medical essays professing a mixed character, and addressed to society at large, must necessarily be sullied by occasional obscurities and imperfections, independent of any defects that may attach to him who presumes to enter the list as a public instructor.

In attempting to steer between the extremes of technical abstruseness on the one hand, and mere popular illustration on the other, it has been my earnest endeavour to render the following observations valuable and accessible to every class of intelligent readers, and I have been careful to divert their attention as little as possible, by extraneous discussion, from the subject under examination. The publication might perhaps have admitted of higher embellishments of style, and several of the subjects might probably have been treated less diffusely; but it is to be hoped that amplification where it seemed most requisite will not afford any ground for bringing these passages under the censure of obscurity. Should this treatise ever arrive at a second



edition, the more radical defects will doubtless receive a gradual melioration by the aid of further experience, as well as from the candid corrections of those who are better qualified to illustrate the subject: such corrections will at all times be thankfully received. I shall only add, that the utmost care has been taken not to introduce any reasoning or deduction which has not been founded on actual observation and experience.

*City Terrace, City Road,*  
*September 16, 1811.*





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## E R R A T A.

- Page 1, erase the mark of parenthesis.
- 11, line 14, erase the mark of parenthesis.
- 14, , after soon, for the word *separates*, substitute undergoes a spontaneous decomposition.
- 14, 14, for *expressed oil*, substitute oleaginous fluid.
- 14, 25, for *essential oil*, read volatile animal oil.
- 16, 2, after *but*, erase the remaining part of the sentence, and read, two peculiar substances that have obtained the titles of Lactic, and Saccho-lactic acids, which however are not altogether constituent parts of this secretion.
- 16, 4, for *this matter*, read the latter.
- 19, in the two last sentences, for *expressed oil*, read oleaginous fluid.
- 62, 16, erase the comma after the word pustular, and for *eruptive and*, read eruption of.
- 62, 18, after the word confluent, insert a colon, and erase the concluding part of the sentence.
- 75, 22, for *those*, read the.
- 77, 23, for *antimonial*, read antimonial.
- 79, 6, instead of *under the head of restringents*, read in Chapter II. part the second.
- 79, 9, for *altogether inadmissible*, read less eligible.
- 85, in the second column, after the words *ipecacuanha in substance*, place a semicolon.
- 86, in the last line but one of the note, for renders *the*, read this.
- 93, last line but one insert a hyphen between gum-kino.
- 100, in the last line but one of the note, before the word strength insert it's.
- 104, 22, for *mostly*, read occasionally.
- 112, 4, instead of *is*, read be.
- 120, 15, for *is*, read be.
- 129, 19, for *use*, read necessity.
- 138, 16, for *cerussa acetata*, read sugar of lead.
- 141, for the terms *cupri vitriolati*, and *bol-armenic*, read blue vitriol, and Armenian bote.
- 167, 2, for *will*, read might.
- 169, in the last line of the note, for *mode*, read resource.
- 174, 24, for *laudanum*, read ladanum.
- 175, 2, for *colombo*, here and in other passages, read calombo.
- 189, 13, for *a part*, read an object.
- 203, 14, for *most*, read many.
- 224, 7, after the concluding word *the* insert affection, and at the beginning of the next line let the word *the* precede structure.
- 225, 12, for *almos*, read almost.
- 237, at the end of the last line but two, insert a comma after the word infection.
- 240, in the third line of the second note, between peripneumonia and notha insert a hyphen.
- 249, in the last line of the text, for *resin*, read resins.
- 262, 14, after the word render, read the.





ON THE  
MANAGEMENT OF INFANTS.

---

P A R T I.

---

CHAP. I.

*On the Treatment of Infants immediately after Birth.*

IF we bestow the smallest contemplation on the state of the comparative part of the animal creation coeval with their birth, the human subject will appear to have fewer resources, and to be more an object of commiseration than the young of any other creature.

It is, as Buffon pathetically (though perhaps too poetically) expresses it, “an image of pain and misery ; reminding us of nature’s designation, that it was born to suffer, and that it has obtained a place amongst the human species, to partake of its infirmities and sorrows.” Its arrival is immediately announced by wailings,

but they are commonly tokens of joy to the anxious parent. Although this early signal of lamentation is generally associated with irritation and pain, yet the least reflection will convince us, that the simple act of crying at this period arises from the institution of a new mode of existence, from the mechanical impression of a foreign element, and the stimulus imparted to the organs of respiration.

The trachea, or wind-pipe, is very frequently incommoded by a glairy mucus which the infant struggles to expectorate, but has no way of voiding it except by crying aloud, or by a feeble effort to sneeze or cough, actions which at the same time contribute to the expansion of the lungs. The surrounding air in its passage to the lungs is somewhat intercepted in the act of breathing by the natural secretions in the trachea, occasioning that peculiar sound, which, in popular language, is termed rattling of the throat ; this impediment is, however, in general so slight, as to attract our attention but little, and very seldom of itself demands assistance.

Sometimes after tedious labours, or from the umbilical chord having been tightly folded round the neck of the child, frequently from extraordinary compression, incurred by its unfavourable position for delivery, especially in breech cases, or other preternatural presentations, and from



other circumstances not so immediately obvious, the infant appears so much exhausted, and to breathe with such extreme difficulty, or irregularity, as to excite on the part of the attendants some apprehensions of danger. The pulsation of the navel string, under the foregoing circumstances, is very languid and irregular, and if (as too often occurs amongst female accoucheurs), any ligature is suddenly applied to release the child, there is danger of its not surviving it. It is not unusual to observe the child to be quite still for a minute or more; then it faintly sobs, or breathes low with the peculiar rattling sound before alluded to, until a more perfect and spontaneous effort to respire ensues. After waiting a reasonable time before the separation of the infant is effected, which should be an invariable maxim, to allow of the gradual accommodation of the infant to the respiratory change of life, provided it still betrays signs of languor or imperfect animation, it may be expedient to stimulate the nostrils by some volatile application, and to employ friction on the chest with warm flannels. Should the intervals of oppression increase, and any remarkable degree of paleness or lividness supervene, it becomes necessary to resort to other active means to effect its recovery. In some cases, where the countenance assumes the livid appearance already described, with manifest symptoms of oppressed

breathing, if the umbilical chord has not been tied, the mere division of it, and allowing it to bleed to the extent of about two or three tea-spoonful, before any ligature is applied, has sometimes afforded very conspicuous relief.

The free employment of agitation is sometimes beneficial, or we may venture to have recourse to artificial breathing, which is done by inserting a pipe, catheter, or quill, into the posterior nostrils, inflating the lungs, and compressing the apertures of the nose at the same time with the fingers, pressing alternately on the chest and stomach, to expel the air from them.

In many instances where the external actions of life appear to be totally suspended, the mechanical inflation of the lungs very soon restores the pulsations of the heart, and the other functions through their connection with the pulmonary organs, independent of any other aid; or in the event of the failure of this process, the application of a warm bath, which should not fall below 100° of Fahrenheit's scale. In more desperate cases it is probable that the double bellows, invented by the late Mr. Hunter, if accessible, would be more essentially useful, or a gentle shock of electricity.

We should not desist from the more simple means of relief in ordinary cases until the natural attempt at respiration is discovered; and frequently after exhibiting half a tea-spoonful

of brandy, or any other spirit, with as much lukewarm water by the mouth, an effort is made to swallow it, or it induces a fit of crying, which commonly places its safety beyond all doubt.

Independent, however, of the usual success obtained by the exertions to restore the infant, very unfavourable cases will sometimes occur, of which there is a memorable example communicated by Mr. Hey of Leeds, in Dr. Underwood's work<sup>1</sup>, where the child was attacked with three or four alarming fits in the course of the day, which appeared to be powerfully relieved by the administration of a few drops of volatile tincture of valerian, although the infant was eventually carried off.

This situation of an infant at birth has been denominated asphyxia; a term which, like many others, expresses less than the actual symptoms imply, since not only the pulsation of the arteries is deficient, but every sensible criterion of life is for a time abolished. There is very little doubt, that in many cases of premature death, where parturition has been concealed from a sense of shame, the infant expires precisely under these circumstances of asphyxia, arising too frequently in this case from its prostrate position on its face, and consequent immersion

<sup>1</sup> Underwood on the Diseases of Children. Last Edition. Vol. I. p. 11.



in the natural discharges at that period from the mother. A very few seconds are sufficient to effect this change; and from the confusion and indescribable emotions on the part of the helpless mother, of course it very seldom happens that the smallest effort is made to restore her unfortunate offspring<sup>2</sup>. In other instances the parent, from the strongest impulse of affection, or by a sort of heroism, is prompted to make artificial attempts to restore the infant, by inhaling air into its lungs, or administering something by the mouth, until at length, having exhausted her best endeavours, she falls into a state of syncope.

This fact has been so forcibly and feelingly described, although with a different view, to the exculpation of the unhappy female, by the late Dr. William Hunter,<sup>3</sup> that it is altogether a matter of the highest importance to bear in mind, should we be accidentally summoned to give a deliberate opinion of the physical cause of death, in a court of justice, upon cases of supposed infanticide.

Another appearance connected with a necessary and important change in the infant's eco-

<sup>2</sup> For some very interesting and important regulations for the recovery of still-born or weakly infants, the reader may consult, with advantage, a popular work, entitled, *Hints for the Treatment of the principal Diseases of Infancy*, by Dr. Hamilton, of Edinburgh. Sect. i. p. 8—12.

<sup>3</sup> *London Medical Observations and Inquiries*. Vol. VI.

mony, is a degree of jaundice about the second or third day after parturition, and in general, like other varieties of discolouration, gradually recedes without the necessity of any artificial relief. Sometimes the yellowness remains for a week, or ten days, with increased vascularity about the eyes, and an unusual heaviness, or an uninterrupted propensity to sleep; it is then perfectly safe and expedient to administer two or three doses of calomel, about half a grain night and morning, and to purge the infant with a dose of castor oil. This plan will almost invariably succeed; at the same time, during the day, a little exercise should be encouraged in the nurse's arms. Should this affection continue after the application of the means recited, a bare half grain of ipecacuanha may be given in a little water as a stimulant and expectorant; the warm bath may likewise be found a useful auxiliary.

As far as respects the first offices of the nurse, the management of new-born infants obtains great similarity in every quarter of the civilized world; and in this department medical advice is seldom required, or is generally superseded. The same custom appears to have been followed with regard to ablution from the earliest times of the Grecian mythology to the present enlightened age, which may be proved from several passages in profane authors, especially Callimachus and Plutarch. This ceremony is

usually consigned to some experienced female, and conducted with every air of gravity and superstition. It is only necessary to state, that to remove effectually the white viscid substance which adheres to the majority of infants at the birth no pains should be spared, by means of warm soap and water ; otherwise, like any other foreign body, it would prove a source of considerable future irritation. It is the necessity of dislodging this substance which gives a preference to the use of warm water over that of cold, although it is a matter of trifling importance where friction must inevitably be employed. With respect to the infant's clothing, every age has thought proper to add or retrench something. Simplicity and care in supplying sufficient covering to preserve the child's uniform temperature, and securing its dress by a kind of swaddling band, seem to be the principal objects. On this occasion it is but right to observe, that where there is no flagrant violation of propriety, medical men are usually expected to sacrifice something to prejudice and superstition, and to acquiesce in established fashions and customs.

I might cite an abundance of ridiculous practices exercised in the most enlightened and polished states, and contrast these with the more simple and rational ceremonies and customs of uncultivated man ; but such a detail would rather tend to our own humiliation, and



scarcely compensate the reader's loss of time. The children of savages, and of the inhabitants of India, are never fettered by supernumerary bandages; on the contrary, they allow the infant the unrestrained use of every organ of motion, and with all other animals a fine shape is out of the question. A recurrence to the simple manners and customs of uncivilized countries can only be useful in teaching us to repress exuberances, or practices directly inimical to the human constitution; but we should never overleap the boundaries of reason so far, as by holding up to imitation the rude habitudes of unscientific man, to forget that we owe almost every thing to cultivated society. It is true that improvements on the subject of clothing have been lately introduced, sufficiently known to be fairly appreciated, and which cannot be too highly spoken of, however they may contradict the opinions of nations of the last century. The most rational treatment seems to be comprised in directing but moderate pressure on the child's belly, to discard all supernumerary bandages and superfluous articles of clothing, and to refrain from the use of pins. Amongst other things an infant requires adventitious warmth; a very little observation of animal instinct will teach us that it disposes the young to sleep: but a due medium of heat should be observed, since every animal possessed of a power of ge-

nerating its own standard of heat, merely requires covering to obviate the too sudden dissipation of it.

In some cities, where fashion too much predominates over the plain dictates of reason, an infant is allowed scarcely sufficient covering, and that too with the concurrence or connivance of those who ought to be the first to censure and suppress such an extravagance. It is hardly necessary to observe, that in so variable a climate as we enjoy, every preposterous extreme of this kind is repugnant to the plainest maxims of common sense. Since we have so judiciously relinquished the hot regimen in lying-in rooms, we have in many instances, perhaps, (at least in this country) only exchanged one evil for another by running into the opposite extreme.

It can scarcely be questioned that children have suffered, with the greatest hazard of their lives, convulsions from tight bandages; this practice therefore cannot be too strongly discountenanced.

It seems here unnecessary to enlarge upon a precept laid down by a popular writer, that a child should have no more clothing than is absolutely required to keep it warm, and so formed as to admit of a sufficient latitude of ease and freedom in the various motions of its body.

The infant for the first ten or twelve hours,

sometimes longer, is commonly supported by gruel, which should be only moderately sweetened, and given without any other admixture; guarding against the gritty matter usually found in moist sugar. Before the child is applied to the mother, which (to avoid unnecessary fatigue, needs not be enforced for several hours), notwithstanding the opposition started by Dr. Gregory, a sensible writer on this subject, and of other respectable characters, who regard it as a matter of no consequence, the author is in the habit of advising a tea-spoonful of castor oil. There are certainly some cases where the above practice may be dispensed with (although in none has it been found to create any disturbance), especially where the secretion of the mother's milk happens later than usual. But where the infant is destined to receive artificial support, the exhibition of some such purgative appears a necessary resort, and ensures the child much comfort, by freely emptying the intestines of the usual viscid secretions, which would otherwise disorder it, the natural purgative quality of the first milk being withheld: in this case, indeed, it will frequently be found necessary to repeat the cathartic.



## CHAP. II.

*On the original Food of Children.*

BEFORE we enter upon the subject of nutriment it may not be improper to remark, that of all animals mankind unquestionably rear the fewest of their young; and that the more cultivated a nation is, the greater is the proportion stated to be lost<sup>4</sup>. It cannot be denied that the frequent and strong attention drawn to this point by medical men has accomplished some reformation in the metropolis; although the investigation already begun is far from being exhausted, yet there is room to hope for more efficient and progressive improvement, since it has been tolerably well ascertained that, at least, thirty out of a hundred infants perish in the vicinity of London within the first twelve months after their birth. Some years ago, indeed, one half were cut off before they could arrive at their fifth year, notwithstanding the numbers preserved by inoculation. It may fairly be presumed that vaccination has considerably reduced this proportion of deaths within the last few years; but

<sup>4</sup> For some truly interesting observations on this point, the reader may consult with advantage the first section of Dr. Gregory's work before alluded to, p. 23 to 28.

we are not yet furnished with sufficient data to form any precise estimate on this topic<sup>5</sup>. There needs, therefore, no other apology beyond the plea of humanity, as well as that of policy, to pursue every means that reason and philosophy can suggest to abridge so serious a mortality.

The first and most important remote source of bodily derangement in the young of our own species, which claims our immediate attention, is the particular food adapted to infancy. The stomach of infants, and of the young of almost every animal, is weak, and incapable of digesting the food which they are required to employ afterwards. We find, in taking a comparative survey of the animal kingdom, that considerable variety occurs in the means by which this food is procured, both with relation to the class of animal, and the circumstances and the stage of its existence<sup>6</sup>: but

<sup>5</sup> For an account of the mortality of young children in London during a period of ten years, see a note from Dr. Hugh Smith's Letters, in *Underwood on Children*. Vol. III. p. 139.

Dr. George Fordyce has observed that, in the metropolis, the loss of young children in the lowest class of society is tremendous, and that scarcely more than half the population of this class attain their fifth year. See Vol. I. of the *Transactions of a Society for the Improvement of Medical and Chirurgical Knowledge*.

<sup>6</sup> Mr. Hunter has remarked in his admirable paper on digestion, that, in one point of view, our food may be considered as a first principle, with respect to which the digestive

the limits of this treatise preclude our extending the inquiry beyond our own species. The milk secreted in the human subject attains its perfect qualities about the fourth day after parturition; it is then found to contain a much larger proportion of sugar, and is more watery. Although it appears a homogeneous fluid when first received into a glass, yet it soon separates, and is found to consist of a solution of coagulable mucilage diluted with water, termed serum of the milk, or whey, of uniform consistence when recent, but sparing in quantity in the human subject, and of a certain portion of saccharine matter. Besides these, we find an expressed oil on the surface, which was before only mechanically mixed, distinguished by the popular appellation of cream, and a further portion more intimately blended with the subjacent fluid, which, as well as the coagulable matter, or animal mucilage, vary in proportion in different women, and in the same individual at different times. The milk of the human subject, in common with that of other animals, contains likewise a small proportion of the neutral salts of the blood, and a still slighter portion of essential oil.

The coagulable matter, which is to be regarded in the light of animal food, constituting the

organs, with their appendages, act but as secondary parts, being adapted to and determined by the food, as the primary object. See his work on the Animal Economy,



most animalized part of this secretion, is readily coagulable by the juices of the stomach, and assumes this change in that viscus of every living animal whether any acid be contained in it or not; but it differs in some trivial respects in the human subject from the same part of the milk in other animals. This substance (which in the latter is termed the caseous part) seems most analogous to albumen<sup>7</sup>; in several other properties it approaches to the nature of fibrin<sup>8</sup>, and is probably an intermediate compound between them.

The saccharine part of the milk which is diffused in the whey, agrees very nearly with the same substance that is found in certain vegetables, as in the sugar-cane, and indeed throughout the vegetable kingdom, in a state of dilution, more especially in the first evolution of the plant. The proportion of saccharine matter is smaller as it exists in the milk of the human subject than in that of many animals; however, it is scarcely necessary to detail or repeat the individual variety, since it has already been noticed by many chemists, physicians, and naturalists.

<sup>7</sup> A generic term of modern chemical origin, borrowed from the natural resemblance of this substance to the white of an egg.

<sup>8</sup> A word of similar meaning with gluten, or the solid coagulable part of the blood, entering, as its name imports, into the constitution of the animal fibre.

Of late, upon more accurate analysis, not only sugar has been detected, but a peculiar substance that has obtained the title of lactic acid. This matter does not present itself until the acid which is found in sugar is previously obtained by distillation with nitrous acid, after which operation a whitish powder possessing an earthy taste is deposited, of difficult solution in water, but being urged with further heat, acquires a blackish hue; the other part of it sublimes in the form of a salt consisting of small acicular crystals, and discovering many affinities in common with other acids. The caseous or coagulable part, when submitted to chemical analysis by heat, affords an empyreumatic oil, ammonia, and a species of carburetted hydrogen; the residuum, when urged with a further degree of heat, presents a small quantity of fixed alkali, and, according to the experiments of Scheele and La Grange, a portion of phosphate of lime. When a woman employs vegetable food, there appears a larger proportion of saccharine matter than when she uses animal, nevertheless the secretion in those quadrupeds which subsist entirely on flesh affords a considerable proportion of sugar. There are several peculiarities attached to this secretion not incidental to the others, and these require our attention.

The milk incurs a change in its physical pro-

perties during the influence of certain emotions of the mind; a more sudden precipitation or separation of its elementary parts is effected, it becomes paler, thinner, and stimulating. This happens more especially during a state of anxiety. If the affection of the mind is slight or transitory, very little harm is communicated to the infant, and *vice versa*. This is a circumstance which cannot be too carefully considered, as it may respect the welfare of the child.

Every parent or nurse should scrupulously watch over her own natural disposition, and guard against the effect of mental excitement or depression whilst devoted to the important office of suckling; for these impressions are capable, through the medium of this secretion, of deranging the infant's health in a material degree.

It is unnecessary to detail facts which the common observation of others is fully adequate to supply; but where illness or other accident constrains us to select a fresh nurse, we should direct as implicit attention to the woman's natural disposition as to her actual health, or other habits of life, or the more immediate qualifications that may fit her for a nurse.



## CHAP. III.

*Continuation of the Subject of Food.*

AS milk agrees in many of its external characters with chyle, the product of digestion, and as a variety of experiments, instituted on other animals, with a view to trace the identity of its elements under every circumstance of living (whether vegetable or animal food is employed), concur to prove that chyle is eventually the same compound<sup>9</sup>, an inference might readily offer, that it was a matter of no consequence how a nurse dieted herself. Very little observation, however, will invalidate this reasoning.

It is a notorious fact, that the milk participates of the deleterious or healthy qualities of whatever ingesta are administered; this is remarkably illustrated in other animals. It is well known that any species of allium, or of yellow clover, or even turnips, impart a very disagreeable essential oil to the milk. The gratiola, or hedge hyssop, has been found to produce a purgative quality in this secretion, and the experiment of feeding cows with madder, in order to detect its colouring properties, has so

<sup>9</sup> See a Treatise by Dr. G. Fordyce on Digestion, p. 120.

often succeeded, as to afford ample confirmation of the truth of the foregoing argument.

With respect to the obvious contamination of the milk in the human subject, so far as its influence may be rendered evident upon a child at the breast, no reasonable person will entertain a doubt; therefore rich savoury food and undue indulgence in vinous liquors are extremely prejudicial on this score. Even subacid fruits, though blended with sugar, will sometimes act upon an infant's bowels very copiously; and I have witnessed various instances where castor oil, or any other cathartic, given to the mother, has exerted all its effects on the child. Opium, likewise, exhibited internally to a nurse will often produce very evident soporific powers on the infant.

The milk is secreted after a full meal, as might be expected, in much larger proportion than after a woman has fasted for a considerable time. In the latter case it has been found that the proportion of expressed oil, coagulable matter, and sugar, is diminished, and that the milk contains more of the neutral salts of the blood, and acquires a bitterish taste.

As the infant advances in growth the milk contains rather a larger proportion of coagulable matter and expressed oil, and thus it is appropriated to the digesting powers of the stomach, until at length it becomes very improper food;

and this circumstance, if we consult the other parts of the animal creation, is very observable in quadrupeds, who immediately, by their natural instinct, repulse their young from the use of the teat, and thus wean them from the further use of it, although extremely fond of them in every other respect.

The proper period for a child's subsisting on this species of food agrees very nearly with that of uterine gestation, or pregnancy, which in the human subject needs no explanation; after which term the milk can no longer be secreted with impunity to the mother, nor without risk to the infant. I am aware that precept avails but little against favourite prepossession, and that human nature is willing to believe itself superior to such law; from a proneness to two extremes, either to neglect suckling altogether, or exercising this office to an unwarrantable length of time. Many mothers are induced to urge that the child cannot be deprived of the breast but with the most painful reluctance, or that it will not sleep without it. Very many of the lower classes of society, and some of the middle ranks, prolong this period from a very different, though uncertain and weak, motive, the dread of too numerous a family; and although it may sometimes be verified, the far greater number daily live to witness the fallacy and future ill consequences of the experiment.



It would hardly be expected when we take the converse side of the question, even in a rude state of society, far less in polished life, when we suffer ourselves to contemplate the strong incitement implanted in every being to provide for its own young, that any argument should be required to expose the necessity of it; or that excuses should be resorted to on the part of a parent in order to forego the irksomeness of the employment. Where a medical friend is consulted to sanction this practice, he very seldom finds that the milk of the mother is not most proper for the infant; the contrary but very rarely occurs when a woman is in good health, although when she is diseased it is generally very improper<sup>10</sup>. In some instances it must be admitted that the parent is incapable of supporting the child wholly on the breast, her constitution is incompetent to the supply, and the child with moderate care may easily be inured to take some proper substitute twice, at least, in the day; this, however, is seldom strictly necessary, and the principal motive for discouraging it is, the proneness observable in most nurses for blending animal and vegetable food on these occasions. If natural instinct and

<sup>10</sup> In some of the higher classes of society, where a constant habit of luxury has undermined the natural vigour of the female constitution, the practice of suckling cannot always be enforced without a hazard of reciprocal injury both to the mother and infant.

affection be insufficient motives to induce every healthy parent to nurture her own young in the manner which the Author of our being has pointed out, still the circumstance of insuring a continuance of health to the mother by such employment cannot be too earnestly enforced, the practice of suckling being fully known to exempt women from many diseases of a delicate and painful kind<sup>11</sup>. Sometimes, however, the sebaceous matter secreted by the glands of the nipple imparts a bitter taste to the milk, and gives it a broken yellowish appearance, so that the infant is disgusted with it; is reduced only by absolute want to use it, and is in danger of being starved. The other case is, where a superabundant quantity of the neutral salts of the blood is secreted, communicating a strong saline taste, which produces a constant state of diarrhœa. These varieties in the secretion, or a very scanty supply of it, appear to furnish the principal obstacles to the encouragement of every mother's nursing her own young; but they are accidents of rare occurrence. Where we discover the nurse to be of a phthisical habit, the milk of such persons is often exceedingly improper. Habitual relaxation of the intestines is also a considerable objection, and should in all

<sup>11</sup> Dr. William Hunter was used to remark, that most examples of cancers in different parts of the system occurred in those subjects who refrained from this duty.

cases be obviated if the child is to be restricted to the same nurse. In women who increase their family very rapidly, the practice of continuing to give suck for a considerable time after they have discovered their pregnancy cannot be too strongly reprobated, although debarring the infant from it is usually thought to be very unnatural. Here again it is incumbent on us to advert to the practice of other animals in a state of nature. If the child is in a situation to require a substitute for its natural food, it is usual to employ the milk of cows in conjunction with some solid matter, in preference to that of other animals; not that the author is inclined to dispute the propriety of this selection, although it might on some occasions vary, perhaps, with good effect; nor that the milk of this quadruped approaches so nearly to the nature of human milk as that of some others, as, for instance, that of the ass or goat, but these are not so readily obtained. For an infant under six months, undoubtedly farinaceous matter is preferable to any admixture of animal broths; and as there is so close an agreement in the properties of this substance from whatever vegetable it is obtained, that was it not for other extraneous matter with which it is blended, it would be almost unnecessary to point out the particular species. We should be very attentive to the purity of the



bread which is to be employed in the food of infants, that it contains no lime, alum, or bitter substance, as these will hardly ever fail to disorder the child, and compel us to substitute other modes of providing for it, although still adhering to farinaceous matter. The superior whiteness of bread manufactured in many parts of this metropolis can only be attributed to some species of adulteration; and the presence of either lime or alum will easily be discovered by macerating the substance in distilled water for six or eight hours, and applying a few grains of the acid of sugar, or the least particle of muriate of barytes, as tests of those articles. Fresh biscuit powder, in its genuine state, forms with water an excellent gelatinous composition for children, more substantial, as well as more gratifying, perhaps, than any other form of vegetable diet; and it is pretty generally regarded in this light by intelligent nurses. It deserves also to be mentioned, that flour which has been submitted to a slow heat for several hours in an oven, until it assumes a greyish mass, when afterwards combined with a liberal proportion of milk, constitutes a very nutritious and eligible modification of vegetable food. The only remaining article of food that needs enumeration is the Indian arrow-root. Although there is reason to believe that much of this substance is

manufactured from the potatoe of our own country, and it seems to possess more of an astringent principle than the feculent matter of flour, where, however, the infant is satisfied with it, it seems entitled to recommendation. It is a singular fact, that in the West India islands the *maranta arundinacea*, or Indian arrow-root, is only esteemed for its medical virtues, and is seldom or never employed by persons in health<sup>12</sup>.

When the full period of suckling is completed, it then becomes an object of consideration to exhibit a certain portion of animal food on some occasions, as mankind is afterwards to subsist on every kind. Yet it is observable in some countries where the inhabitants never consume animal food, even scarcely as an article of luxury, that their children, who are likewise deprived of it, still appear robust and blooming. This system of education is very widely pursued in Scotland and Ireland, and in the northern counties of England; the children and their parents are supported, in great measure, on milk, or butter-milk and potatoes; and it is well known that an immense proportion of the Asiatics subsist entirely on rice, others of them on pulse. Custom, and the climate of Great Bri-

<sup>12</sup> See a paper by Dr. Clark on the comparative quantities of amylaceous matter yielded by different vegetables in use in the West-India islands, in Dr. Simmon's Medical Tracts, Vol. VII.

tain, may seem to authorise the mixed system of living on animal and vegetable food ; and the prejudices of the inhabitants of this island will strongly incline them to reject the exclusive plan already adduced. Certain it is, however, that a healthy infant requires but a spare allowance of animal food in any form, but the custom of giving it in a solid state is an abuse which should be universally proscribed ; light bread puddings, or a fresh egg, beat up with milk alone, afford far superior nourishment. It is of consequence to admonish the parent, that with a view of gradually introducing a change in the infant's diet (more especially when her own health is affected from having confined the child to the breast) the early commencement with pap, or any of the foregoing articles, is highly rational ; for experience will shew that where this custom is neglected till the necessary period of weaning approaches, the difficulty of reconciliation to this plan is much increased. The common sense of every discreet mother will probably anticipate many of these regulations, and she will naturally foresee the risk and inconveniences to the child of embracing any change too suddenly. When an infant is deprived of the breast, either from disease in the parent, or any other accident, in many cases it is found extremely difficult to substitute any food that conveys equal strength and nourish-



ment with light puddings, or a small proportion of beef-tea with the biscuit powder. Yet sometimes it will pine and appear to suffer from complete inanition, and at length it may be necessary to procure a fresh nurse; and one whose milk is recent should in this instance be selected, particularly if the infant is very young. It is not only matter of curiosity but of considerable moment, to observe how long a period will sometimes elapse before we are in possession of the proper substitute for the breast, and how much the diseases of infancy will be aggravated during this interval, although we are fully acquainted with the properties of human milk, and employ every art and pains to succeed and to imitate its nutritious qualities; so that we shall frequently be constrained to resort to the child's primitive support, which on this occasion, at least, proves both food and medicine.

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#### CHAP. IV.

*On Cleanliness, and its Abuse, and on the general Utility of Bathing.*

THE preservation of health is so materially interwoven with cleanliness, that it forms one

of the most important considerations in the management of infants; and it is observed as a precaution in the young of every other animal instinctively. The vessels on the surface of the body at this period are lax and numerous, and the secretions very copious, particularly in the cuticle, and this part in infancy is extremely irritable. There is a slight portion of neutral salts contained in the matter of our sensible perspiration, which without sufficient care is allowed to accumulate in the form of a thin pellicle on the surface, after the evaporation of the aqueous part. This substance is found to stimulate, and if suffered to remain in any part where there is a natural fold, or duplicature of the integuments, lays the foundation for erysipelatous inflammation, or cutaneous eruptions that have a strong tendency to spread, of which we see numberless instances behind the ears, beneath the arm-pits, or between the thighs, and about the groin, in very fat children; which appearances would seldom occur in healthy children were they kept clean and dry. It has often been contended that these ulcerations were drains, intended to carry off the noxious humours of children, although this is merely a whim of the nurse; so that infants, forsooth, are not to be kept clean in order to prevent them, nor are they to be cured by any external application; and this prejudice has not

unfrequently furnished excuses for negligence and inattention to children. It is impossible to represent in too forcible a light the infinite consequence and beneficial effects of cleanliness in the rearing of infants; and it concerns every parent to reflect, that whether her offspring is educated in town or country, where this circumstance is neglected, she fails to discharge a very important duty to her family and to society. An opinion may be entertained that where certain inevitable local disadvantages are found to exist, the observance of cleanliness will be of little avail; this idea is, however, contradicted by a variety of experience. The regular and healthy functions of the skin can only be maintained by cleanliness, which may be very easily effected by the practice of bathing.

It is impossible to do justice to so interesting a topic as that of bathing without some reference to it as an object of political economy. Here I must candidly avow, that I have no details or facts to offer except what have been incidentally collected from ancient record, and from an appeal to the practice of Russia and other neighbouring nations. Still I cannot refrain from expressing a belief, that if public baths of easy access (not entirely, perhaps, on a gratuitous plan) were established more generally in certain districts of this metropolis, their utility in preserving health, and on the score of



universal cleanliness, would be equally conspicuous in every stage of human life.

There are countries in Europe where the use of public baths is popularised by political laws; here it is complied with either as a luxury confined to a few, or as a painful mortification by invalids<sup>13</sup>.

In eastern countries the uniform practice of bathing before or after stated meals, and the construction of public baths, has been prevalent for a series of ages. We are informed that the Romans were late in conforming to the custom of bathing, the different methods of which they derived from the Greeks; nor was the daily use of it established until the time of Pompey<sup>14</sup>. Pliny, however, assures us, that during the times of the Roman emperors there were no less than 870 baths in the city and within the suburbs of Rome; and the same philosopher states<sup>15</sup>, that in consequence of Augustus having been cured of an alarming illness through the use of the cold bath, by order of his physician

<sup>13</sup> Although religious tenets have from the earliest times maintained great ascendancy in establishing the custom of bathing, still this is no argument that can operate to its disadvantage; on the contrary, it must be regarded as a fortunate coalition of circumstance when the rites of religion concur to aid any institution calculated to preserve health and cleanliness.

<sup>14</sup> *Mercurialis de Arte Gymnasticâ. Lib. i. cap. 10.*

<sup>15</sup> *Histor. Naturalis. Lib. xxxvi. cap. 15.*

Antonius Musa, that cold bathing and the institution of baths were highly patronised, and extensively employed during this prince's reign<sup>16</sup>. The magnificent structure of the public baths in the environs of Rome is a well known matter of ancient record; and is mentioned by a very animated and profound historian, in a high strain of panegyric; for we are told that the meanest Roman could purchase with a small copper coin, in value about one-eighth of an English penny, the daily enjoyment of a scene of pomp and luxury, which might excite the envy of the monarchs of Asia<sup>17</sup>. The remains of the splendid baths of Titus are still contemplated as objects of admiration within the precincts of modern Rome, in many of which the subterraneous avenues are adorned with paintings, which Raphael did not disdain to imitate. "Those also of Caracalla and Dioclesian are still to be seen; a part of the latter of which now forms the grand Carthusian church<sup>18</sup>, <sup>19</sup>."

Dr. Willan, in his review of the diseases of London, conceives, and with great reason, that

<sup>16</sup> *Histor. Naturalis. Lib. xix. cap. 8.*

<sup>17</sup> *Gibbon's Roman Empire. Vol. 5. 8vo. p. 283.*

<sup>18</sup> *Abbé Barthelemy's Travels in Italy, in one of his Letters to Count Caylus.*

<sup>19</sup> For an interesting account of the institution of public baths, and the custom of bathing in Russia, see Tooke's *View of the Russian Empire.*

it is the neglect of cleanliness and of the custom of bathing which gives rise to such a numerous tribe of cutaneous distempers, almost peculiar to this island. There is much opposition of sentiment in the mode and advantages of bathing in infancy, either with a view to cleanliness or to the increase of strength. Several authors of repute have manifested a very ridiculous degree of tenderness in expressing themselves on the use of cold bathing, not considering that the human subject from his birth is in every particular a creature of habit; and unmindful of the practice of many nations in the more northern parts of Europe, as well as of those who are commonly styled savages, but who act more consistently in this department of early infancy than our pusillanimous advisers would dictate. There are certain conditions of the human frame that point out some restrictions in our recourse to bathing; and the degree of temperature, as well as the peculiar action of the cold-bath, require a little explanation. As our ideas of cold and heat are merely relative, it will be proper to consider that every degree of heat between  $68^{\circ}$  and  $36^{\circ}$  of Fahrenheit's thermometer shall be deemed a cold bath; and from  $70^{\circ}$  to  $85^{\circ}$  or  $90^{\circ}$  will constitute a tepid bath. In children that enjoy good health, the bath at a temperature of  $48^{\circ}$  or  $50^{\circ}$  of Fahrenheit not only guarantees cleanliness, but acts as a prophy-



lactic against contagious diseases, and the pernicious effects of a great vicissitude of climate. In those who are delicate the medical effects of bathing alone cannot be too highly appreciated, but in cases of actual infirmity it should be used with caution. The late Dr. Currie of Liverpool, whose judgment ought to have some weight on this subject, was in the habit of tempering the water when the weather was severe, and of sometimes pouring it on the convalescent, rather than advising too precipitate an immersion<sup>20</sup>.

In a large town or city, to counterbalance in many cases the unavoidable impurities to which infants are frequently exposed, and to fortify the system against remote causes of disease, it is almost impossible to devise a more effectual preservative, in every sense, than cold bathing. It may be commenced as a necessary part of the discipline of education from the end of the second or third month, not only with perfect impunity, but with every prospect of the highest advantage, provided there be no cutaneous, inflammatory, or bowel disorder. This regulation would not only secure the infant from the risk of suffering the common effects of cold, but there is the greatest reason to believe that

<sup>20</sup> See Dr. Currie's reports on the effects of warm and cold bathing, &c.

it would be a means of diminishing the catalogue of delicate, scrofulous, and ricketty subjects, so numerous and formidable in many parts of this kingdom : and was it only confined to this great object, independently of cleanliness, it would surely deserve our utmost regard. We need only attend to the ruddy health and sturdy make of young children in Scotland and Ireland, who are constantly inured to cold, and accustomed to every species of exercise, as soon as they are able to crawl about bare-footed. It is strictly true, as the late Dr. Gregory has judiciously remarked, that nature never made any country too cold for its inhabitants ; nor even in northern countries, where bathing is so indiscriminately employed, is it confined to the object of restoring strength to an exhausted machine, but as preventing the evils and uncomfortable effects arising from uncleanness. Immersion in cold water may be said to produce three distinct effects ; an instantaneous and powerful shock, a sudden abstraction of heat from the surface of the body, and that exertion of vital energy to counteract the shock, and restore the lost quantity of animal heat, which is termed reaction. In some few instances, experience will shew that the animal powers are so much depressed by cold bathing as to discourage its repetition ; the early effects of it should therefore be dili-

gently attended to. In confirmation of the occasional disadvantages of bathing, few persons are ignorant that the too frequent repetition of it, or too long immersion, as it is not unfrequently practised by children, or indiscreet people, has been found to produce very great debility; which, however, is altogether foreign to the salutary mode of using it as here recommended. In the act of dipping, the immersion of the body should be universal, the infant being supported by the breech and shoulders in the arms of an assistant; it should be plunged rapidly into the bathing tub, and the process as quickly repeated, if it be necessary to employ a second or third immersion. It should afterwards be received into a flannel covering, and be immediately wiped entirely dry, which process, by the friction employed, generates a pleasant glow over the whole surface of its body. With regard to very young children, it appears most eligible that they should be put to bed after this operation, for a sufficient time at least to allow of the re-accumulation of their natural heat, except in the height of summer; and this plan ought to be repeated every other day for the first two or three weeks, and afterwards daily, throughout the principal part of the year. It is scarcely necessary to premise, that children should not be bathed soon after a full meal, nor during actual perspiration; nor should



they be allowed to remain in the water above one or two minutes at farthest during infancy; indeed where the mode of dipping them already pointed out is adopted, this last restriction is in great measure superseded.

Many parents, for want of resolution, and others actuated by too scrupulous an indulgence of their more simple feelings, have frequently imagined that the action of cold is too severe a shock for the nerves of a tender infant, or that it would occasion fits or convulsions. These suggestions are merely the effects of vulgar prejudice, that are easily combated by a larger sphere of common observation, and are daily contradicted by the habitual practice pursued in various parts of Europe. I cannot, however, suppress the inclination of subjoining a single remark, which, however seemingly repugnant to the foregoing reasoning, is founded on truth, and should challenge some portion of our attention, although it is introduced merely as an exception to general rules and experience.

Where the infant has enjoyed what might be termed an excess of health, and the experiment of cold bathing has been delayed to a more advanced period of childhood, and has then only been commenced from a prepossession of its indiscriminate service in promoting strength; I have occasionally witnessed some very unfavourable effects from the experiment.

How far these inconveniences might have been obviated by a gradual change of temperature in the water it may be difficult to determine. In some of these instances the disadvantage might perhaps be ascribed to some peculiarity of individual temperament or constitution, but it was sufficiently evident that the cold bath rather seemed to diminish than increase the bodily strength<sup>21</sup>; yet this can be no argument against the use of cold water in any shape, with a view to cleanliness.

Under the head of cleanliness I might fairly point out the advantages now pretty generally acknowledged to result from the frequent practice of whitewashing the apartments, and the occasional use of lime-water as a preventive of contagious diseases. Ventilation of the nursery is also a very essential point wherever large families are reared; and the occasional use of cold vinegar on the floors. The foregoing expedients are so universally accessible, and are found so instrumental in restoring the original purity of the air, as fully to compensate the necessary care and attention which this part of domestic management calls for. Nor ought we to overlook the great importance of removing any

<sup>21</sup> That cold bathing is not to be regarded universally as a salutary expedient receives further confirmation from occasional examples of its apparently injurious effects at the adult period of life.

local nuisance that might operate as a remote cause of acute disease, either as matter of comfort or immediate policy, on the score of health ; this intimation deserves more serious circumspection, since the latest investigations of the remote causes of the most alarming contagious fevers have been clearly traced to similar sources of neglect.

This observation has been confirmed by ample and melancholy experience in various parts of America, at Gibraltar in the last pestilential disorder, and in various parts of our own country.



## CHAP. V.

### *On the Alvine Evacuations, or excrementitious Discharges from the Bowels of Children.*

ALTHOUGH the subsequent observations may not altogether comport with the delicate feelings of every reader, yet it is to be hoped that the importance of some general deductions, connected with a more strict attention to the evacuations of infants, will in great measure atone for the occasional disgust which only a slight investigation of the subject may afford.



We need scarcely advert to the urinary secretion of infants as a criterion to inform us of any important change in the animal economy; although where it can be matter of observation during the progress of an acute disease, it may equally tend to illustrate its crisis or decline, as at a later period of life. Nor is it necessary to offer any remarks on the ratio of their perspiration; but a very important excretion, and one that cannot fail to strike an intelligent observer in any sphere of life, is that of the evacuations from the bowels of children, which are not unfrequently characteristic of the least deviation from the standard of health. It may be laid down as a general rule, that no infant can enjoy an uninterrupted state of salubrity without having at least one or more evacuations in the course of twenty-four hours.

Before I attempt to make any particular remarks it may be necessary to observe, that there is frequently no small difficulty in communicating our ideas on this subject with precision, from a paucity of terms which common language supplies to express unequivocally the sensations which we receive from the indefinite nature of colour, odour, &c., so that experience demonstrates, that we are often embarrassed in attempting to convey simple ideas by words in common acceptation; in short, to supply that by circumlocution, which a discerning eye can easily

ascertain. The nature of the aliment of young children at the breast, and of those that subsist on a liquid and vegetable diet, would, perhaps, lead us to expect a looser consistency in their fæces than in subjects at a more advanced period of life, and this is strictly true. In a state of perfect health the evacuations of an infant are almost universally of a bright orange cast, of a tolerably uniform consistence, and rarely assume any regular configuration. Sometimes, however, they manifest a thicker, and again rather a clayey and glutinous, appearance; at other times they betray to the smell a degree of sourness. When the excretions are in any remarkable degree fetid, except in the instance of unusual constipation, they are mostly accompanied with a portion of slimy mucus from the inner surface of the intestines. It is by no means easy to characterise the peculiar odour of alvine evacuations in health; but to the term fœtor, which has in this instance been applied, one might annex a sort of faint, sickly effluvium. Where the fœtor discovers itself without the concomitant slimy appearance before alluded to, it is only to be attributed to a derangement in the office or structure of the excretory glands, which discharge their contents into different parts of the alimentary canal; but as these secretions are so numerous, so dissimilar in their origin and properties, and can never become objects of

direct experiment, it is often impossible to point out the actual source of such change. The evacuations in health are expelled without any great exertion on the part of the child, and the same may be remarked in the young of other animals; on the contrary, at the approach of indisposition, or when the infant betrays any symptom of pain, the fæces are then protruded with some degree of violence by something like a spasmodic effort. When the evacuations are pale, knotty, and of a firm consistence, we may be assured that the liver (which is a most important organ in the process of digestion) cannot be performing its usual office. During a state of diarrhoea we observe alternate changes of a green and yellow hue, nearly of the usual colour at first in many cases, but soon degenerating into an intense green, and which are generally more or less adhesive to the linen. When the infant is suffering under any local disease, or other peculiar irritation, as in the act of teething, the evacuations throughout the whole period of indisposition are frequently of a very pale aspect, and much thinner than usual; sometimes, however, under the influence of these causes the fæces are of a slate colour, and occasionally a dark ochre-brown; in either of these predicaments they often exhale a very unpleasant and disgusting odour. The foregoing symptoms will sometimes continue for a consi-



derable length of time if no remedy be applied, and are almost constantly indicative of a very imperfect state of digestion. The continuance of green fæculent discharges will very often be accompanied with more or less of painful eructation, hiccough, and flatulence; at the same time the bowels will be affected with spasmodic pains; these will be denoted by the child's drawing up its legs towards the abdomen, or by violent fits of screaming. A very obvious and infallible characteristic of a vitiated state of the stomach and bowels, though not of common occurrence, will be found to attach to the appearance of small portions of unassimilated or half digested food; particularly if solid meat, or the fat of it, is given to children during the weakly state of the digestive organs: indeed, not unfrequently the absurdity of such a practice is even evinced by the infant's rejecting it by vomiting. When the evacuations are very slimy, or streaked with blood, or of a sanious appearance (at which time they will be highly offensive), we may generally anticipate some degree of inflammation of a more or less formidable kind; nor can these be long voided without an abrasion of the inner membrane of some part of the intestines. It is almost unnecessary to state the critical situation of an infant under these circumstances, and the indispensable necessity of the utmost medical skill and assiduity. The appearances

of the evacuations of infants are not nearly so complicated, so far as they denote disease, as we find at a late period of life ; indeed, as so many infantile disorders derive their origin from the particular state of the alimentary canal, this fact is the less to be regarded with surprise. There is another appearance attendant on disorder of the first passages of infants, frequently connected with universal bodily emaciation, the *fæces* resembling a gross powdery substance, totally destitute of moisture, of a greenish yellow shade, or with streaks of both variously interspersed. I have witnessed the state of excretion last described for several weeks, and even months together, sometimes where constipation occurred ; and even in cases where the infant has passed three or four or more evacuations in the day, so that it could not arise from simple absorption during retention of the *fæculent* matter in the lower column of the intestines. In a late instance of this description, where it was plain that the liver scarcely acted at all from the first month after birth to the child's decease, a period of sixteen months, this peculiarity in the discharge was attended with a pale clayey appearance of the *fæces* at intervals. There are, doubtless, other phenomena relating to the excretions from the bowels, which medical men of extensive practice are perfectly competent to describe ; and this subject is one which would seem to merit a

far more attentive consideration than has usually been bestowed upon it. But the vast benefits to be derived from a more scrupulous investigation of this topic to practitioners, to patients, and to medical science, are too obvious to require any further comment in this treatise.

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## CHAP. VI.

### *Exercise and Sleep.*

TO whatever extent we may feel a reasonable pride in descanting on the exalted privileges of man in the scale of creation, yet we cannot but acknowledge that, in the degree of his locomotive powers at birth, he ranks greatly below every other order of animals. The same comparative difference will apply to many of the external senses; but Infinite Wisdom has balanced these apparent imperfections with superior blessings. The evolution of the body in general outstrips the developement of the mind, and a very little consideration will shew that the progressive change in man, and the early perfection in the organization of other ani-



mals, were intended to correspond accurately with the relative wants of both classes of beings. In nearly all the brute tribe there is a strong propensity to bodily exertion from the earliest period of their birth, alternating with an inclination to sleep, and to preserve their natural warmth in the most convenient attitude.

It is a common axiom in health, that the proportion of sleep assimilates pretty accurately to the quantity of exercise employed. Yet in very young infants we find a great disproportion; for during the first three months they appear to require in most instances a superior share of rest.

But as the subject of *exercise* ought to precede that of *sleep*, I shall enter upon it first.

The exercise which nature points out as being requisite for several months ought to be gentle, and of a very simple kind; and with a view to the full benefit of health should be encouraged as often as possible in the open air. An infant in health seems delighted with some degree of agitation, by lifting them in the arms, and dandling them on the knee: every affectionate mother or nurse must feel an intuitive conviction of this circumstance, without any formal recourse to argument. Such exercise, however, should have its stated intervals, and should be less encouraged immediately after feeding them (although different ideas obtain with some on this

head<sup>22</sup>); and it is hardly ever practicable during the night.

Since habit has such universal dominion over us, it is impossible to insist too much on regularity in every duty that regards the well-being of infants.

During the day, after the first six or eight weeks, a child should be allowed only short intervals of repose, otherwise it contracts an unpleasant habit of sleeping very imperfectly, or of discovering a state of uneasiness and restlessness during the night; nor is it necessary to rock children, which is too generally practised, by which means hiccough, and sometimes sickness, are induced after a full meal. If we did but reflect more closely on the simple practice of uncivilized countries, and on the unerring sagacity of inferior animals, at a period of life when the

<sup>22</sup> An experiment to discover the relative progress of digestion during brisk exercise and sleep has been tried on animals of a different class by Professor Harwood of Cambridge; and on examining the contents of the stomach after death, it was found that the food had undergone scarcely any change in one which had been hunted several hours after a full meal; whilst in the other, that had been suffered to obey its own instinct near a good fire, the food in the stomach had completely gone through the first process of digestion. It may be necessary to add, that the preceding experiment was made upon two dogs of the same age and breed, that had been selected for the purpose of ascertaining this interesting fact.

analogy between us and them will be found most complete, how many useful hints might we derive, and how many superfluous wants or ridiculous customs might we abridge, or utterly discard ! In this department of education the appeal is generally made to slavish usage, so that if our friend employs a rocking cradle, we, forsooth, must adopt the same ; but let it suffice to observe, that in health these expedients are totally useless, and in disease nearly unavailing. Although the exercise which we give to very young children be of a passive sort, still it produces a degree of exhaustion, unless relieved by intervals of repose ; as they advance in life, and can employ all their voluntary muscles, perfect fatigue takes place both of body and mind, and sleep in more equal proportion ensues. “ That lively and restless spirit which in infancy seemed to animate every thing around it, gradually contracts itself as the child advances in life, nature requiring no more motion than is necessary for its preservation, and sinks at last into that calm and stillness which close the latter days of human life<sup>23</sup>.” The ancients were very systematic in the early cultivation both of the powers of the body and of the mind ; their exercises were more athletic, and their bodies less enervated than those of modern times ; indeed their ju-

<sup>23</sup> Gregory’s Comparative View, &c. Sect. i. p. 61, 62.



ditions system of education, with a view to public utility, was in no instance more apparent than in this particular. It has often been agitated whether we could be too premature in putting an infant on its legs? A very weak analogy has generally been resorted to on this occasion; and because other animals are perpetually in motion, it has, therefore, been contended that children should follow their example. This suggestion was inculcated with a particular air of shrewdness by the late Dr. Hugh Smith, who was esteemed a very popular and acute reasoner in many other matters. With respect to the active powers of the human subject compared with those of other animals, there are anatomical and physical reasons that sufficiently serve to establish a striking difference. The laws that regulate the consolidation of parts, and the deposition of bony matter in early life, are known to vary according to peculiarity of constitution, and in the most forward of the human species are more slowly completed than in other animals. Almost any person, however unacquainted with human anatomy, is sensible of various degrees of forwardness in the ossification of the bones of the head, in the neighbourhood of its principal sutures, particularly where they intersect or meet each other a little above the forehead, and towards the back part of the head. In many children, distinguished by

large heads, this apparent imperfection is often very conspicuous; and these subjects frequently labour under a degree of weakness in the lower extremities. Would it therefore argue any peculiar wisdom, or sagacity, to practise such children in the early manoeuvres of walking, from a motive of imparting to them strength? The safest criterion to direct us in this instance may be collected from attending to the natural and instinctive propensities of an infant, and marking its ability to support the erect posture, where no particular restraint has yet been adopted, as every kind of spontaneous exercise is to be preferred.

Before an infant is trained to employ its strength in walking, it appears most rational to place it occasionally on a soft carpet. We often feel a lively interest in observing that its early attempts to crawl are gradually succeeded by a voluntary extension of its limbs in pursuit of some instrument of diversion. At the advance of spring, in summer, and in dry weather, this exuberant activity, which is implanted in children for the wisest purposes, may be encouraged on a grass-plot. This manner of educating them in their first movements will fully supersede our absurd custom of confining them with leading-strings; and they naturally acquire a wish to repeat the experiment, until they are altogether weaned from the nurse's lap. In warm climates

a child is suffered to shift for itself, and practises walking on the foregoing principle in half the time which is consumed in effecting it in the southern parts of Europe. It is impossible to reflect on the difference which is observed in the education of the two sexes, without a conviction that, from the sedentary life of females, much deformity may be incurred, particularly in weakly children, or in those descended from ricketty parents, in the trunk and bones of the pelvis. No preposterous system, however countenanced by fashion, of urging girls to sit long intent on any delicate work, for the acquisition of any accomplishment that is incompatible with health, should be pursued; in short, until nature has made considerable progress in the evolution of the body in either sex, the mode of education, so far as respects the different species of exercise, should be regulated nearly on similar principles. “The happiest period of human life, the days of health, cheerfulness, and innocence, on which we always reflect with a mixture of pleasure and regret, are spent in the midst of tears, punishments, and slavery; and this to answer no other end but to make a child a man before nature intended he should be one<sup>24</sup>.” It is unnecessary upon a point so obvious, to prohibit the exposure to night air. When the atmosphere is clear, and the weather temperate, exercise should

<sup>24</sup> Gregory's Comparative View, &c. p. 76.



be encouraged at mid-day in spring and autumn; and in the summer months it should be had at an earlier hour, to avoid the debilitating effects of heat. But reason, however, must loudly protest against carrying infants out (except under the cheering influence of the sun, at the advance of spring or autumn) during the prevalence of very keen winds, such as the north and north-east, which are often productive of the worst inflammatory diseases.

From the sudden changes that are found to occur in infants labouring under bowel complaints, or any degree of inflammation in the abdomen, or in affections of the chest attended with difficulty of breathing, experience induces me to lay down a positive injunction that children under any of these circumstances should by no means be taken into the open air. On the contrary, they require a higher but steady temperature of heat throughout the whole progress of these affections.

After dismissing the subject of exercise, the next in order which claims our attention is that of *sleep*.

Although it be in some measure difficult and futile to lay down fixed and precise rules about the proper quantity of sleep, or to take the apportionment of it out of the hands of nature for the first few months, still, like every other function that is capable of being regulated by

habit, it demands, as we have already intimated, some degree of notice.

Sleep at the outset of life is found to be more tranquil and less likely to be interrupted than at a later age, except from the returning calls of hunger.

As there is but little mental exertion during the first stages of infancy, and but few ideas from outward sensation for several months accurately impressed, the child's actions appearing the result of instinctive agency, sleep seems principally required to refresh the bodily functions. Digestion is facilitated during the continuance of sleep, and whenever the infant awakes, its faculties are in a perpetual state of energy; the powers in this respect, as far as we can judge, seeming to keep pace with the evolution of body and mind conjointly. Notwithstanding the little apparent intellectual exertion at this tender age, still the extreme sensibility and natural irritability so remarkable in the early periods of childhood, without frequent intervals of rest and sleep, would experience irretrievable exhaustion. As the infant has such slender means of adjusting the necessary motions of the body with a view to its early self-preservation and comfort, it is incumbent on us to place it in the most commodious posture for these purposes, when it is thought right to en-

courage rest ; which object may be best accomplished by reposing it on its side. To prevent weariness or uneasiness, that might succeed too long a continuance in the same position, it may, notwithstanding, be proper occasionally to change the sides, or to place the infant on its back. The practice of rocking children to sleep is not only absurd and unreasonable, but is attended with the additional inconvenience, which few nurses are wholly ignorant of, that the infant naturally looks for a repetition of the process during the night, or otherwise obtains but little rest. An infant should not be startled or awakened out of its sleep by any rough means, nor placed in too great a glare of light, although it is in general apt to be delighted with a gentle glimmering flame, like that of a candle. The first impressions also should be studied which the child is likely to receive on first awaking, otherwise experience shews that it often becomes difficult to pacify it during the remainder of the day. Montaigne carried this mark of paternal solicitude so far in the instance of his own infant son, that he is reported to have gradually roused him from sleep by soft music ; this, however, is a species of discipline, which, as Dr. Struve has justly remarked, could not be extended beyond the first year or two with any good effect. Children after the first month do not require being put to bed in their usual clothes, especi-



ally as the precaution is generally taken of supplying a sufficiency of adventitious covering; nor should they be surrounded with curtains, by which the air becomes vitiated, and a constant state of perspiration is encouraged. A loose sort of nightgown, or long calico shirt or chemise, is quite sufficient, except in very severe weather; and even then it is far preferable to increase the child's warmth by additional bed covering.

A very pernicious custom obtains of allowing infants to sleep the whole of the night in their mother's arms, which is fraught with no little danger. It may be urged, perhaps, in defence, that a mother's vigilant anxiety is the child's best safeguard; but it is impossible that a female can provide against such injury without being at all times conscious of her own movements as well as those of her infant: besides it produces great relaxation in both, independent of the imminent risque of suffocation to the child.

## CHAP. VII.

*On prejudicial Customs, and Negligences of  
different Kinds.*

IT has already been observed that the skin of infants is peculiarly irritable, it is therefore highly incumbent on those who are entrusted with their care to be attentive to their different excretions, not only with a view of preventing partial excoriations, but of obviating any degree of relaxation that might be incurred where their linen is not frequently renewed. Cold water should very frequently be applied with a sponge to the nates and groins, by which means the cuticle is better enabled to resist the stimulating qualities of the urinary discharge, and of thin acrimonious fæces. It is not easy to conceive a more distressing cause for an infant's suffering than inattention to the foregoing circumstances, and it is found to be a very common occasion for their cryings. This inconvenience is often to be attributed to the custom of continuing the use of pilches after the first two months, which are constantly galling the child, and keeping up a degree of irritation, or giving rise to uncleanness, or eruptions, and fissures of the skin. Buffon gives us an example of the extreme

care which savages display out of tenderness for their young. In North America, a quantity of dust obtained from wood that has been worm-eaten is placed at the bottom of the cradle, which is renewed as often as appears requisite ; on this powder the infant is laid, and covered with skins, and all superfluous moisture is thus completely hindered from coming in contact with the child. The rude simplicity and tender caution that distinguish this custom cannot fail to excite our interest and admiration. Another, but a different source of error, too frequently pursued, is that of blending different spices with the food of children ; an indulgence which is rarely necessary, is calculated to excite a false appetite, and is often the cause of an infant's stomach being overcharged. If the infant appears flatulent after a hearty meal, the nurse will frequently exhibit a little ginger or allspice : one natural inconvenience accompanying this practice is the difficulty of leaving off any artificial stimulus, and the absolute need of increasing the dose under this circumstance.

A more serious evil, however, calls for animadversion, since it is too generally resorted to by those who have the care of nursed children, viz. the custom of drinking and administering different kinds of spirit. This practice is more commonly detected amongst those women who have but a sparing supply of milk, so that spirits



are often employed as a ready substitute for this natural and indispensable secretion. It is unnecessary to point out the deleterious effects of spirituous compositions on the infantile frame, independent of the essential disqualifications that must eventually attach to the nurse; but I believe this pernicious expedient is more prevalent in the metropolis and other large towns, where the morals and habits of the largest class of the community are more easily depraved.

A very reprehensible practice is sometimes observed amongst nurses, which relates to the propensity of chewing a child's food before it is administered, in order to save the trouble of the infant's mastication; this custom is not wholly destitute of danger, particularly if the nurse has bad teeth, a scorbutic disease in her gums, or any worse disorder occupying the lips or fauces. The motive for this practice is doubtless affectionate, but a mother cannot be too circumspect in whom her confidence is to be placed for the nurture and education of her young.

It might here perhaps be expected that I should offer some remarks on the choice of a wet-nurse, but at the present day it is almost a superfluous task, and is generally, for very ample reasons, submitted to a medical confidant; indeed the title and limits of this work would scarcely admit of my entering upon this subject.

Having witnessed, however, on many occasions, two errors of considerable importance

where infants have been critically situated, I esteem it a duty to point them out. In the first place much unnecessary alarm is often excited about the communication of hereditary diseases from strangers, of the nature of which those who are best acquainted with every part of the animal economy are perfectly ignorant. Some mothers, although utterly incapable of discharging the important function of suckling their family, discover the most pertinacious reluctance to entrust the most eligible person with the care of an infant, a species of prejudice which no argument or experience can justify. By the anticipation of imaginary evils, it sometimes happens that even a fond mother may suffer herself to agitate the expediency of putting her infant out so long, that the benefits which might be derived from the breast of a healthy woman are completely cancelled.

The other circumstance of material moment to investigate, as far as respects the immediate qualifications of a nurse, is the age of her milk. In treating of the natural history of this fluid, it was observed that the saccharine and coagulable matter varied according to the particular age of the infant, and the increasing powers of its digestive faculty. Nothing, therefore, can argue greater inconsistency than to consign a very young infant to the charge of a wet-nurse without scrutinizing the foregoing point ; and it is much to be feared that this instance of



neglect has not only brought frequent disgrace on a stranger, but has led to very serious consequences on the part of the child.

The next subject of animadversion, although it might be regarded as matter of frivolous notice, respects the habit of a child's vociferation and crying, and the common mode of appeasing it. This incident is too generally regarded as an infallible mark of hunger, and upon this persuasion is grounded a degree of pusillanimous slavery and subjection to infantile caprice and the early dawns of passion. This observation may sound too much like criticism, or it may seem to oppose common experience, and to provoke the imputation of cold insensibility; but there is a wide difference between tame experience, and rational observation which would often correct our actions, or influence our moral sentiments and decisions, very differently, were we to attend to it. It cannot be disputed, that children are very often to be appeased by giving them food during a fit of crying, and it looks like an act of sympathy to comply; but it produces a quietude of short duration, terminating very frequently with a mere change of the object. The impatience of an infant should prescribe patience and resolution to the mother. Loud vociferations sometimes denote real hunger, occasionally they are expressive of pain, but there are other indications requisite to confirm the latter suspicion. In many of the fore-



going cases a degree of accuracy is conveyed by various signs, which are scarcely within the province of words only to illustrate, but which experience and continued attention will hardly fail to supply, and such information as every fond and rational parent ought diligently to cultivate. Crying is an action, from whatever cause or impulse it may proceed, that operates on the respiratory and digestive organs much in the same manner, though more partially and with greater irregularity than other species of exercise; therefore it is not always prudent or necessary hastily to repress it; and if the child happens to be affected with any unusual shortness of breath, or has already been overloaded with nourishment, it is folly to have recourse to feeding it. It is not, however, intended to neglect the early dawnings of temper; the future moral education of children, and the propriety or impropriety of our progressive treatment of them, must depend a good deal upon this attention. In the human character, we find a very early display of painful and pleasing incongruities, such as cunning and simplicity, impetuosity and inactivity, versatility, sprightliness of conception and dulness, obstinacy and affection; and it is to be remembered that an acquaintance with the language and signs of sympathy ranks among the first ideas which childhood and infancy supply. Regularity in our de-

portment towards them, and a seeming indifference where there is reason to anticipate the rise of any discordant passion, are the most discreet rules which experience suggests. But it is equally necessary to proscribe such a degree of frigid inattention as would preclude all thought or solicitude on the foregoing head; it is only necessary to observe, that a nurse should be suffered to pursue her duty without at all times allowing the infant to take an indiscriminate advantage of her simple feelings, or to sacrifice every thing to the transitory gratification and false affection of the moment. To enter more fully into this point would scarcely be practicable, without investigating the early mental endowments of children, a branch of inquiry both curious and useful, but inapplicable to the present treatise; and which has already called forth the more fertile and profound researches of metaphysical and moral writers.

It is almost unnecessary to offer any directions for the early discovery of every species of fall, or accident occurring in infancy, more particularly where the head is implicated. Fortunately, throughout the whole term of childhood, the natural powers of recovery and partial reproduction from recent external wounds are particularly rapid and vigorous, when unimpeded by universal indisposition, or peculiarity of constitution. But the smallest fracture will not unite favourably, or

without manifest deformity, unless with the aid of surgery; and dislocations, which are easily effected by rude and violent efforts to drag or sustain children by their own weight, may, after the lapse of a few days, resist any subsequent attempts to remedy.

Before I conclude this chapter, there is a striking and very frequent instance of neglect that may lead to a considerable degree of future trouble and inconvenience which ought to be noticed, and it respects the non-observance of cleanliness of the hair and head. For want of frequent combing, and the regular use of soap and flannel, a dirty, glutinous, scurfy matter is apt to accumulate about the hair, generally combined with a pustular, eruptive, and disgusting appearance, and with a great tendency to become confluent, which in the course of a short time degenerates into a mild sort of *tinea capitis*, or scald-head. The eruption is by no means stationary or confined to the head, but if it occurs about the time of teething, it pervades part of the neck, or displays itself in an erysipelatous form behind the ears and about the lower part of the child's face. The discharge proceeding from these ulcerations is so virulent, that very little doubt can reasonably be entertained of its power of contaminating other children who may be exposed to its contact; it injures the hair considerably, and is found to stop its growth, and is



always accompanied with a scabbing process, which is extremely difficult to remove, unless the surrounding and even the affected parts are shaved, the short hairs acting as an extraneous substance. The appearance of this distemper is always opprobrious and offensive, although happily it may not only be obviated by cleanliness, but almost in every instance, by an early attention to the confluent sores, an easy and expeditious cure may be prognosticated. The incrustations, which are of quick formation in young subjects, should not be roughly removed, as the scabbing process is calculated to defend the subjacent skin, and to facilitate indirectly the cicatrising action of the vessels. The best mode of treating this affection is to apply every night a liniment, composed of two scruples of white precipitate of mercury, levigated, to one ounce of pomatum, and during the day to employ frequently a lotion, consisting of two drachms of Epsom salt, or a scruple of vitriolated zinc, and eight ounces of rose-water. In more inveterate cases of this disorder, which may have resisted the foregoing remedies, I have uniformly succeeded in curing it by a liniment composed of equal parts of yellow basilicon ointment, and the ceratum hydrargyri nitrati, employed in the same manner as the foregoing formula. Another form of lotion may also be administered with effect by the interpo-

sition of a fold of soft linen, continually moist, consisting of five or six grains of corrosive sublimate, and two scruples of crude sal ammoniac in powder, dissolved in half a pint of rose or elder flower water; always distinguishing such preparation by a title, and securing it from the approach of other children. Where the infant happens to be very gross, or has been fed luxuriously, it may be necessary to have occasional recourse to a dose of calomel, or to administer half a grain night and morning for a week or ten days, interposiug an active cathartic discretionally; indeed this plan appears very instrumental in obviating a return of the disease.

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## CHAP. VIII.

### *Observations on the Medicines usually administered to Infants.*

IN many cases of trivial indisposition, or even at the commencement of acute disorders, at a distance from proper medical aid, many parents are solicitous of acting the part of physician; but in order to exercise the art with safety or

effect, considerable accuracy of discrimination is required, and it is scarcely possible to urge too much deliberation. It is chiefly from these considerations that any endeavour to simplify or elucidate the grounds of medical treatment should here be expected; and it is principally where nurses or parents are guilty of putting their own experience and sagacity in competition with regular advice, that any censure or mischief can arise.

The remedies usually resorted to in infantile disorders may be arranged under the following heads.

The first general class of Evacuants comprehends a very numerous tribe, which, however, on the present occasion may be reduced to the following distinct orders, each requiring a particular consideration. Cathartics, emetics, expectorants, and sudorifics.

The second class, Stimulants, either universal or partial, and which will include volatile applications, wine, aromatics, and blisters.

Thirdly, Tonics, or strengthening remedies.

Fourthly, Simple Astringents.

The fifth class will comprise Narcotics, or Sedatives; to which we may subjoin the use of leeches, fomentations, and the warm bath.

Few subjects of medical inquiry are involved in greater obscurity than the precise mode of action of numerous articles of the *materia medica* on the human frame. Considerable difficulty attaches



to the explanation of their operation in disease, and to certain peculiarities of constitution, independent of the precarious means of estimating the proper doses of the article employed to effect the object required. Indeed the imperfect analogies that have been adopted to elucidate the specific action of medicines, are fully evinced by the illegitimate and unmeaning nomenclature of the most systematic writers. Much of the ambiguity, however, attendant on this subject will be avoided by the limited survey of the *materia medica* here presented; in which I trust that few important omissions will occur, and that the effects of the different articles enumerated will be found definite and unequivocal.

Under the head of *cathartics* a variety of useful medicines might be pointed out, of more extensive application, in childhood, than those of any other denomination, although the inordinate use of them exhibits a very frequent proof of infatuation and prejudice. These are principally obtained from vegetables. The first, and most commonly employed, is rhubarb, which in very small doses proves a stomachic as well as slight astringent, but when exhibited in more liberal doses, is found to act as a purgative<sup>25</sup>. This article is peculiarly adapted to the early stage of infancy; at the age of two

<sup>25</sup> It is hardly necessary to dwell upon the specific operation of this class of remedies on particular organs, although

or three months, four or five grains will suffice; from eight to ten grains will be found necessary for a child of six or eight months, and from fourteen to eighteen grains for an infant a year and half old. When a child suffers much from flatulence, attended with simple constipation of the bowels, the foregoing substance combined with a few grains of calcined magnesia, or of one or other of the absorbent earths, as prepared chalk or coral, will often prove a very eligible carthartic. In more advanced childhood, or where a more active purgative is indicated, castor oil presents itself as a useful and expeditious medicine; a single teaspoonful to one and a half, or two small teaspoonfuls, may be administered to an infant at the periods of three, six, and eighteen months.

Jalap is an article endowed with very active properties, and applies better in combination with the more simple carthartics, such as crystals of tartar or manna. It excites often we might demonstrate some of them as exciting a greater secretion of watery fluids by their evacuant effects; others more simply confined to the muscular or peristaltic action of the intestines; and the influence of others determined principally to the liver, &c.; whence they have been divided into laxatives and purgatives. Some articles quicken the pulse, or materially affect the stomach, at the same time that they promote evacuations, such as scammony and jalap; whilst neutral salts have no such effect. The foregoing distinctions, however, are more interesting to the medical student than to the general reader.

violent action of the stomach, and is upon the whole an ineligible substance uncombined with any other gentler purgative for very young subjects. Combined with a grain and half of ginger for a child of six or eight months, four or five grains of jalap will be found an adequate dose; and from eight to twelve, and eighteen months, seven, ten, or fourteen grains will be required. This medicine is chiefly employed as a cathartic for the expulsion of worms, in conjunction with scammony and senna; and in these cases it is a very efficient preparation.

The mineral kingdom also supplies us with three very useful purgatives, viz. sulphur, magnesia and calomel. The latter claims great preference in a variety of cases, not only for its superior virtues in the disorders of infancy, but the convenience of exhibiting it to children in any conserve or mucilage, beyond most of the other articles that have been described; its dose in infancy from the third, fifth and sixth month to a year or a year and half, varies from one to two, four, or even five grains. Still the indiscriminate employment of it in the nursery should not be encouraged, as the repetition of it requires considerable judgment; and the singular effects of mercurial preparations on some constitutions ought to preclude any empirical trifling with so important an article. The foregoing observation is the more worthy of attention, in as much as



any serious inconveniences resulting from the abuse of this medicine might subject a valuable and indispensable remedy in many of the disorders of childhood to unmerited disgrace<sup>26</sup>.

Magnesia either common or calcined, furnishes a also very useful laxative, applicable to the earliest period of childhood, in all instances of derangement in the alimentary canal, where this class of remedies is pointed out. The calcined article is a more active preparation than the other, and where acidity is conceived to prevail in the stomach, it is a very advantageous medicine; from ten to fourteen or fifteen grains will be found an adequate dose for the first three months to the age of twelve or fifteen months, when a scruple or more will be found necessary. The common magnesia is generally employed in doses of half a teaspoonful, or sixteen or eighteen grains to a full teaspoonful within the preceding term of life; and it is often found convenient to blend it with a little dill, or weak mint water. It is seldom the

<sup>26</sup> In some cases where calomel appears indispensable, it is found to excite vomiting in delicate children to a very distressing degree; on other occasions to operate with great violence by stool, or to produce severe spasmodic pains of the intestines, these inconveniences are sometimes obviated by the addition of a grain or two of aromatic powder or toasted nutmeg: sometimes the drastic effects of this medicine will be counteracted or moderated by three or four grains of rhubarb.

practice to give neutral salts at this period of life; indeed their nauseous taste would rather prohibit it, besides that they require more water for solution than can be properly accommodated to the stomach of an infant. The phosphate of soda, however, is by far the most insipid of these salts, and would certainly prove a useful substitute for some of the foregoing articles in doses of a drachm and half to two and three drachms, with the least quantity of water that can be employed for solution.

Another mode of obtaining relief from the class of aperient remedies is that of injection, and very frequently the most eligible means afforded us, both in point of expedition and simplicity. Not that injections are intended to supersede purgatives given by the mouth, but as auxiliaries: the trouble attending them, the uncouth manner of performing the operation, and the difficulty often alleged of procuring assistants, are the principal discouragements. These preparations may be made of either chicken broth or thin gruel, with the addition of a desert spoonful of coarse sugar or treacle, of the same quantity of culinary salt, or two or three drachms of Epsom salt. For infants under two years of age, labouring under habitual costiveness, half a pint of the foregoing compositions will in general suffice, increasing the proportion of the salts according to the exi-

gency of the case; plan is far preferable to a continual repetition of active carthatics by the mouth. For a very young infant, four or five ounces of any thin mucilaginous fluid will be found an adequate quantity; but upon the whole, it is always preferable to employ rather a larger portion<sup>27</sup>. Injections also are found to act as local fomentations, and would often supersede the use of the common empirical and uncertain aperient remedies with which children are tormented, such as Daffy's elixir, or the use of prunes, senna, jalap, or syrup of buckthorn; articles frequently very offensive to the tender stomach of an infant.

Injections in many instances are necessarily resorted to, where remedies by the mouth can only with the utmost difficulty be exhibited; as, for example, in those intervals of stupor accompanying convulsions, or the effusion of water within the brain; under these or any other similar conditions, a repetition of them will often be attended with incalculable benefits. Nor are they confined in their medicinal effects, considered as a medium of relief; various antispasmodic remedies admit of

<sup>27</sup> The common Castile soap and water affords likewise a very good injection, where the other ingredients that have been pointed out are not immediately attainable, which may frequently occur in the night.



this mode of introduction, and with the most conspicuous advantage, for instance the addition of twenty or thirty drops of volatile tincture of valerian, or tincture of asafoetida to the preceding formula, or combined with simple warm water. By immediately stimulating the intestinal canal with a medicated injection similar to those recently pointed out, the spasmodic diseases of children are frequently alleviated in a very eminent degree. Even opiates are administered occasionally by this means with superior safety and effect. It is of further importance to notice that medicated injections, such as a strong decoction of Cinchona or Peruvian bark, with a portion of the same substance in powder, or the substitution of a small dose of the powder of Columbo, and a drachm or two of the syrup of white poppies, administered three or four times a day to patients of all ages labouring under obstinate intermittents, have been frequently known to remove the disease, where medicines taken into the stomach were nearly inert, or only served to nauseate the patient. The foregoing circumstance is particularly worthy of observation, as it may relate to the early appearance of intermittent fever in children; to whom it is often impracticable to exhibit medicines the least nauseous with any degree of regularity, and it is a practice sanc-

tioned by an eminent practitioner of one of the most distinguished hospitals in this metropolis.

The next order in the class of Evacuants comprehends emetics, which, if judiciously employed, will often afford extensive relief. Under this head I shall treat of Expectorants which generally produce more or less nausea, and are to be regarded as milder nauseating stimulants, except that they are designed to increase the secretion and evacuation from the lungs only. An emetic produces in general a considerable shock on the system, which terminates in languor and temporary debility of the principal vital functions, on which account it is often prohibited, or unnecessarily dreaded; although these effects are mostly counterbalanced by eminent advantages, in cases where this class of remedies is strictly indicated.

The degree of exhaustion created by the operation of an emetic is sometimes in proportion to the extent of its evacuating effects, but not always; and in some cases the constitution appears to suffer but little from the increased action of the stomach. The preceding circumstances are, however, much influenced by the irritability of the individual, and by the dose, as well as the active qualities of the substance employed. In infancy, an emetic is frequently indispensable in catarrhal affections; but the

#### 74 MEDICINES ADMINISTERED TO INFANTS.

efficacy of simple expectorants is extremely precarious at this period of life. Whatever is actually dislodged from the windpipe in most instances, passes into the stomach; indeed, the perfect discharge of any substance from the lungs in the act of expectoration by the mouth, appears to require a concurrence of the will: therefore, at a very early period of infancy the incomplete mode in which this process is effected ought always to claim our attention<sup>28</sup>.

The great popular outcry against emetics in general, is the imaginary debility which they produce; so that the risque of suffocation is to be incurred, rather than to confide in a safe and expeditious remedy. In children deprived of the breast, who are frequently made to subsist on a variety of food, the stomach is not uncommonly deranged so much, (especially where animal food is promiscuously allowed), that a gentle puke at the commencement of indisposition would often obviate further inconveniences. And in cases where a routine of purgative and strengthening medicines have been ineffectually employed, we are sometimes ultimately reduced to this alternative. Emetics, as I have already intimated, produce a twofold effect, they are to

<sup>28</sup> Very often recourse being had to tickling the fauces or palate with a feather, or obliging the infant to swallow a little warm water, will excite a more effectual discharge by the mouth.



be regarded as universal stimulants, and are very powerful instruments of expectoration, and of evacuation from the stomach; but it is a matter of some importance to regulate the choice, as well as the dose of the article we mean to employ, and the most judicious period for exhibiting it. The virtues of this class of remedies are far more extensive than would be easily anticipated by any person unacquainted with medicine. In obstinate diarrhœas, a nauseating remedy will often suspend, and in some instances entirely remove, the complaint. The action of an emetic is powerfully evinced in promoting absorption, where any superabundant fluid is contained in any cavity of the body. Nor ought the observation to be omitted, that an emetic has frequently displayed the most salutary effects in the cure of intermittent fever, exhibited about an hour before the expected period of its return; probably from the shock imparted to the system, as well as the subsequent universal relaxation so analogous to those symptoms of crisis in fever.

At the commencement of the Croup, so fatal a disorder in early life, the benefits of an emetic are too obvious and important to be overlooked. In the early stage, however, of those that are called bilious diseases, this remedy is far less salutary than is generally imagined; in these cases spontaneous vomiting is so early a symptom, that emetics seldom fail to derange the fu-

ture progress of the disorder, rendering the stomach so extremely irritable, that neither food nor medicine can be retained. It is generally, therefore, the most rational and successful practice in the first instance, to invite the natural and healthy functions of the bowels, which is best effected by a dose or two of calomel, in such quantity and combination as to avoid its nauseating effects; and to encourage its immediate action on the bowels by the occasional administration of injections. The usual article employed as an emetic, and one of the most uncertain and violent in its effects during the term of infancy, is antimony dissolved in wine. The effect of this mineral upon the adult is sometimes extremely debilitating; we should, therefore, readily conceive that it is capable of acting with much greater energy on a tender infant, and experience will abundantly justify this inference. In some instances antimonial preparations are found to induce convulsions, and they frequently occasion a distressing degree of languor and extreme coldness, and paleness upon the surface of the body.

The most delicate preparations of antimony are sometimes known to produce violent effects on the internal coats of the stomach; in this respect its operation resembles that of mercurial salts, or preparations of copper, most of which excite the stomach to evacuation, not as specific,

but as universal irritants, or, strictly speaking, as poisons. Antimony very often exerts its principal influence on the bowels, and will sometimes affect the stomach, but in an inferior degree; and for this reason, except in febrile or acute inflammatory disorders, it is not so eligible for children as a vegetable substance possessed of more simple nauseating qualities. In those cases where a preference is given to emetic tartar, we should be extremely careful that it is reduced to an impalpable powder, and that it be perfectly white; indeed, the genuine state in which this salt is prepared for medicinal purposes, affords a specimen of the most delicate and regular crystallization. The proper dose for an infant at the age of three or four months, is from one-fourth to one-sixth of a grain in solution. Occasionally a quarter of a grain produces but little sensible effect; it is far more expedient, however, to repeat the medicine at discretional intervals, than to exhibit a more active dose in the first instance, except in the case of any poisonous substance having been inadvertently exhibited. The medical effects of antimonial salts are very much diminished by allowing a watery solution to remain exposed to the air; they undergo a gradual decomposition, and cannot long be trusted to in any definite proportion: it is also preferable to employ distilled water on these occasions.



The article, however, chiefly to be relied on as an emetic, more particularly in childhood, is ipecacuanha, which is administered either in the form of powder, or aqueous, or vinous infusion ; the latter is called ipecacuanha wine. Where this medicine is genuine, half a grain is often found to be an adequate dose for an infant about two or three months old ; in other instances a grain will not appear too much. A child of eight or ten months will sometimes require three or four grains of the powder of ipecacuanha ; but where the wine is accurately prepared (on account of the nauseous and disgusting qualities of this article in substance), it seems to claim a preference : twenty or thirty drops will suffice as an emetic for an infant about two months old ; and from one drachm to a drachm and half will be found necessary at the ages of eight, ten, or twelve months. Sometimes where we wish to obtain very decisive advantage by an emetic, and the infant has reached a more advanced period, and is tolerably robust, it is rather better to combine the ipecacuanha with a small dose of antimony, about one-fourth of a grain of tartarized antimony ; the unpleasant action of the antimonial preparation is somewhat modified, the operation of the medicine is decidedly quickened, and its effects are more universal. Ipecacuanha undoubtedly acts more immediately on the stomach than antimony, and, except in large doses,

seldom excites any irritation in the bowels ; its relaxant operation on the skin is very evident, and when we wish to employ a simple expectorant, this medicine may in general be depended upon. In cases of dysentery and diarrhœa, as will be specified under the head of restringents, ipecacuanha in small doses produces the most striking good effects, where preparations of antimony are altogether inadmissible. Where vegetable or mineral poisons have been accidentally swallowed, it is customary to administer vitriolated zinc<sup>29</sup>, which sometimes proves a very stimulating emetic ; and under circumstances of such imminent danger the dose is not so precisely limited or fixed. This article is also sometimes given in cases of epilepsy and convulsions, in doses of three or four to six or eight grains, within the first two or three years of childhood. The white vitriol as it is sold in commerce is, however, so exceedingly impure, that it ought never to be exhibited internally ;

<sup>29</sup> Vitriolated zinc has obtained a preference from the suddenness of its operation ; but unless it is soon evacuated by vomit (which is easily effected by employing it in a considerable dose), it is apt to encourage a very distressing state of nausea for a longer period than is necessary. As a further argument in favour of the exhibition of this emetic, it is asserted, that where the poison happens to be of the vegetable narcotic species, such as opium, it so completely paralyses the muscular functions of the stomach, that an ordinary emetic has but little power to excite its action.

See Rees's Cyclopædia, *under the head of Emetics.*

but the salt should be always obtained from some accurate chemist in small distinct crystals.

Having expatiated so much on the use of emetics, it will not be necessary to dwell long on the next order of evacuants, namely, Expectorants; these constitute a class of substances, whose action is apparently determined to the mucous membrane of the lungs, occasioning a larger secretion and consequent evacuation from their internal surface, but their operation in this point of view is sometimes obscure and fallacious. In the hooping cough, or any other severe catarrh, this species of remedy seems to act as a sort of natural cure for these diseases; at least where evacuation by the mouth can be accomplished, many distressing symptoms admit of manifest relief. The benefits of expectorants are more particularly conspicuous in the adult, and at an advanced period of life, in asthmatic and catarrhal affections; but in young children, topical inflammation, especially of the lungs, or of their investing membrane, seldom yields in any considerable degree to this class of remedies, and therefore the cure by resolution, as it is termed, viz. depletion by copious evacuants from the bowels, and the abstraction of blood from the neighbouring parts, ought always to precede the exhibition of any species of expectorant whatever. In acute and inflammatory affections of the lungs, (which are very prevalent in most parts of this country at the commence-



ment of the winter quarter, or at the decline of spring); my own experience induces me to repose much confidence in administering small doses of calomel with the expectorant. A very obvious effect resulting from this combination is an increased secretion from the bowels, and in those cases where the action of the expectorant is but slight, a considerable relaxation of the skin is frequently induced.

In children of delicate constitution, where the affection of the lungs is frequently complicated with various symptoms of irregularity in the digestive organs, and the use of the lancet cannot safely be urged, leeches, and the adoption of the foregoing remedy, have afforded the most striking relief in many instances of imminent danger. The application of medicine is attended with such contradictory results in different individuals, that many of those articles which have been enumerated under the title of expectorants are very uncertain in their effects, some of them acting entirely on the kidneys. Those chiefly employed or to be recommended in infancy are gentle doses of ipecacuanha, antimony, or squill, but the latter not so frequently. Some of the warm gums, and ammoniacum, with volatile alkali, have been much extolled, but these are seldom admissible at a very early period of life, owing to their inflammatory and stimulat-

ing properties, as well as the extreme uncertainty of their operation. Seneka, garlic, and kermes mineral, an officinal preparation of antimony, are employed as expectorants in some parts of America, and on the continent of Europe, but seldom in this country. In those cases where we determine to employ an expectorant, five or six drops of antimonial wine for an infant two or three months old, or one-eighth or one-sixteenth of a grain of emetic tartar, or half a grain of antimonial powder, will be found an adequate dose for a child of six or eight months, commencing with the least portion. Ipecacuanha in substance may be combined with a few grains of sugar, in the dose of one-fourth or half a grain for an infant of two or three months; where it has attained twelve or sixteen months, a grain may be required, or we may substitute from forty to fifty drops of ipecacuanha wine: the dose, however, of each of these articles, as well as the intervals of repetition, must be regulated by the particular constitution of the infant, and urgency of the indisposition.

The next order of evacuants, and the only one which it is necessary to investigate on the present occasion, is that of Diaphoretics, or Sudorifics. Medicines of this class exert their principal effect on the skin in two ways, either

producing simple relaxation, with a diminution of temperature at the same time ; or conjointly by augmenting the heat of the skin, and universal exhalation from the surface. It would appear that few diseases in early childhood experience much abatement from sudorifics alone. In the adult, or at the approach of old age, the good effects of diaphoretics are far more obvious in the acute disorders incident to those periods. Before I enumerate the species of sudorifics, it is necessary to premise one remark, which indeed might be deduced from their obvious effects already adverted to, that very different sudorifics are indicated according to the excess or defect of the temperature of the skin, and that those which are eligible or salutary in a state of excitement, are hurtful in the opposite state. The disposition to this excretion depends much on the particular state of the skin, independent of disease, a coarse and dark skin being found far less prone to this action than the soft and fair skin. Experience likewise shews, that in a state of moderate health the constitution is less disposed to an increased action of the exhalant vessels, than under the influence of great fulness on the one hand, or of languor and relaxation on the other. The principal remedies under the head of diaphoretics are, antimony, ipecacuanha, neutral salts,



particularly nitre, and acetate of ammonia, camphor, and contrayerva. The energy of these medicines may be increased by the operation of the warm bath, or by diluting drinks, such as weak white-wine whey, tea, or plain gruel. The four leading articles that have been enumerated are most commonly to be confided in, sometimes administered jointly, at other times separately; but this point must be submitted to medical direction. Besides these substances, which partake of the more active properties of a sudorific, there are several of a more inert description which claim a considerable share of popularity, viz. Gascoyne powder, saffron, and the common marigold in infusion; remedies which are frequently exhibited during the acute stage of eruptive disorders, to induce sweating, and to increase the eruption. These articles have very little influence as relaxants, and fortunately possess but a moderate share of stimulus, otherwise the indiscriminate use of them at the commencement of the small-pox and measles would frequently be attended with unfavourable consequences. In general, the empirical interference with the early eruptive process of contagious diseases is perfectly unnecessary, nature for the most part is altogether competent to the developement of the eruption; and in those instances where the

force of the circulation is more limited, and the constitution appears to suffer from a suppression of the eruption, more active means must necessarily be resorted to than those which have already obtained so large a share of popular credit.

A Table of the proper doses of the two species of diaphoretics that may be employed in infancy, the interval of exhibition varying according to the severity or mildness of the disease.

First species, or simple diaphoretics, which in general will be found to lower the temperature of the skin.

Age.	Ipecacuanha.	Antimony.	Nitre, and Nitrous Ether.	Acetate of Ammonia, and common saline mixture.
From six to twelve months, or a year and half, and two years.	<p>Eight, ten, or twelve drops of the wine, to twenty.</p> <hr/> <p>Of ipecacuanha in substance one-sixth to one-fourth, or half a grain.</p>	<p>Antimonial powder, or Dr. James's powder, one-sixth to one-fourth of a grain to half a grain.</p> <hr/> <p>Antimonial wine, four, six, or eight drops to fourteen.</p>	<p>Three, four, or five grains of the salt.</p> <p>Six, ten, or twelve drops of spirits of nitre.</p>	<p>A teaspoonful to two teaspoonsful, which it is often advantageous to combine with one or other of the foregoing articles.</p>

Second species, more stimulating, and doubtful as to the extent of their relaxing effects.

Ages.	Camphor.	Compound powder of contraverva.
Four, six, or twelve months to one year and half.	Half a grain to one grain and half, or two grains.	Four, six, or even eight grains.
	Aqueous solution of camphor, or camphor julep <sup>30</sup> half a tea- spoonful to one and a half.	

In comparing the above statement with respect to the dose of the first species with what has already been said of emetics and expectorants, we shall see that by increasing the dose of the two first articles, we shall convert the medicine into an emetic, expectorant, or sudorific; but by blending either of them with the saline preparations, the diaphoretic virtue is more certainly obtained.

Although it has been suggested, that during the term of infancy the majority of diseases ex-

<sup>30</sup> The camphor mixture of the London Dispensatory. The proportion of camphor held in solution is very inconsiderable, which renders the form of preparation more eligible for the period of life here under consideration.



perience but slight remission from sudorifics, and that in some instances the symptoms are evidently aggravated by them, yet it may be necessary to point out such situations of the animal economy as for the most part contraindicate the use of either species of them, especially the latter, liable to very few exceptions.

First, in inflammatory diathesis, or that state of the system when the blood vessels are already acting with increased energy, and the subject is evidently of a full habit, which will frequently be denoted by universal efflorescence, or a sharp vigorous pulse.

Secondly, in the early stage of the natural or inoculated small-pox or measles, where either of these disorders assumes a confluent appearance.

Thirdly, in most instances of considerable difficulty of respiration, indicative of inflammatory affection of the chest, either of the viscera or containing parts; except those of the first species. Cases of scarlatina may also offer an exception in favour of the milder sort of the first species, after evacuation from the stomach and bowels has been resorted to.

Lastly, when the first passages are oppressed by impurities, either a superabundance of viscid phlegm or crude indigestible food; or when the body has been debilitated by preternatural evacuations of any kind. The saline

diaphoretics already pointed out are often found extremely useful in fevers, the milder eruptions, and inflammatory disorders, more especially the simple saline mixture, prepared with lemon-juice, which is less likely to nauseate than the acetate of ammonia; the particular cases, however, that require this class of medicines will be specified in the sequel of the work.

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## CHAP. IX.

### *Continuation of the preceding Subject.*

IT is next in order to treat of the class of stimulating substances usually administered in early life; these require but a summary investigation. Almost every medicine endowed with sensible properties admits of the term stimulant in an extended sense; but they are generally restricted in a medical view to the operation of increasing the energy, quantity, or duration of contraction of the heart and arteries; as well as affecting other vital functions peculiar to the brain and

nerves. These medicines are likewise to be considered as antispasmodics; but no class is so subject to abuse in the whole tribe of infantile complaints. Stimulants have been sometimes divided into diffusible and durable: the former are more particularly to be regarded as antispasmodics; to wit, opium, æther, volatile alkali, spices, camphor, and different wines: to which we may add blisters and rubefacients. The latter comprise a variety of tonics, the effect of which is more permanent and less exhausting, such as various articles of animal food, the weaker kinds of vinous beverage, warm aromatic gums, as myrrh and asafoetida, cascarrilla, and canella alba, &c. All those medicines or dietetic means that are capable of rousing or supporting for a time the languid powers of animation may be ranged under the head of stimulants.

During the term of infancy, the principal cases wherein nurses are tempted to administer spices or cordial waters are those of flatulence and griping pains in the bowels, though frequently but little acquainted with the remote causes of these affections. The stomach of a tender infant is surely much abused by the indiscriminate application of wine and brandy, or aniseed water. Even medical men have been known to sanction this caprice, from an



idea of strengthening a child, although it is scarcely once in a hundred times they effect this. Most of the foregoing articles, except in cases of extreme debility, more particularly the spirituous compounds generally render the infant uneasy, hot, restless and vigilant. On some occasions, port-wine in moderate quantity is eligible as a cordial when blended with mucilaginous drinks, or with sago, during the existence of pain and relaxation of the bowels. But if we cannot oblige nurses to refrain from employing remedies to correct flatulence, we should at least direct the most innocent, and abstain from the use of strong spirituous distilled waters; a little grated nutmeg, with a few grains of rhubarb, or a grain or two of ginger administered in the infant's food, are likely to be far more salutary.

The following table is intended to exhibit the doses of different stimulants, or antispasmodic remedies that may be occasionally resorted to in cases of unusual languor, temporary pain, or partial convulsions, in the absence of foul tongue, much obvious derangement of the alimentary canal, delirium, inordinate heat of the skin, or eruptive fever.

Age.	Æther.	Compound spirit of ammonia, or sal volatile.	Volatile foetid spirit, and volatile tincture of valerian.	Tincture of lavender and aromatic tincture.	Camphor mixture.
Three and 6 months to one year and half, &c.	Diluted with water, four, six, eight, or ten drops, <sup>31</sup> to fourteen or sixteen.	Diluted with water, six, eight, or ten drops to fifteen.	In a state of dilution, 2, four, six, or eight drops to twelve or fourteen.	Diluted, 6, eight, ten, or twelve drops to fourteen or sixteen.	Half a teaspoonfull to two teaspoonsful.

With respect to the use of blisters, they appear to require some circumspection. The temperament at this period of life is so extremely irritable, that in doubtful cases where a nurse has no very correct idea of the infant's complaint, it is most advisable to omit them altogether. For the same reason other rubefacients as they are called, such as sinapisms, or strong volatile alkali rubbed on the skin, should be rejected in a common way. In some spasmodic cases there are strong advocates for these stimuli, but they frequently produce considerable mischief, by keeping up universal irritation and restlessness; the application of them should therefore always be submitted to medical controul. The principal exception in favour of

<sup>31</sup> Attention should be paid, however trifling it may seem, to the relative weight and bulk of a drop, which will depend on the viscosity of the article, and the lip or mouth of the phial. Four drops and half of alcohol dropt from the same vessel will weigh only *one* of water, which has occasioned the term drop to be expressed by grains in some of the modern dispensatories. In solutions of opium, arsenic, tartarized antimony, &c. this circumstance merits consideration.

this class of stimulants appears to attach to cases of topical or general internal inflammation, where blisters and rubefacients are often found to contribute very essential relief.

The next class of substances of more general utility, and better defined or understood than the last, are tonics, or strengthening remedies. Tonics include a great variety of medicines, and different dietetic means of increasing the quantity of living power, either of a part, or the system in general. Their action is that of lessening nervous irritation, without exerting any powerful stimulus, or, in other words, they diminish the irritability of the system. When the body is weak it is in general more irritable, spasmodic contractions are apt to ensue upon the application of the least stimulus, and the nervous power acts more on one part than on another. On the contrary, when the habit is strong, the force with which the circulation of the blood, and all the functions are performed, is calculated to resist the effects of cold, or any other morbid cause or application, and then the functions of the system are conducted more uniformly, or with greater regularity. The following tonics admit of application, where strengthening remedies are indicated in most cases of ordinary debility in childhood, although the principal use of this class of medicines is to restore tone to the stomach and digestive organs, in order to



enable these to convert a larger proportion of alimentary matter into healthy chyle. Cinchona, or Peruvian bark, Angustura bark, various bitters, as columbo, gentian, quassia, orange-peel, &c.; amongst the mineral tonics, chalybeate salts and calces of iron, vitriol of zinc, &c. From most of the vegetable substances enumerated in this class a strong watery infusion may be prepared, which may be taken in various degrees of strength twice or thrice a day, or any two of them may be more advantageously combined. Port wine is likewise a very useful and safe tonic in many cases; the quantity of a large teaspoonful, or a desert-spoonful may be administered in infancy two or three times a day from a very early period of life.<sup>32</sup>

The next class of substances includes Astringents; in general, the mildest of these articles are employed in the disorders of infancy; indeed, several of those substances which have obtained the name of astringents are but little entitled to the appellation, such as isinglass, hartshorn shavings, sago, and different preparations of chalk, gum arabic, gum tragacanth, &c. The more active medicines of this class are red rose leaves, alum, gumkino, a resinous substance, oak-bark, and small doses of opium and ipeca-

<sup>32</sup> Most of the foregoing tonics are directed in their most appropriate form and doses in the course of the second part of this work, which renders a table here unnecessary.

cuanha. Astringents enable a part already too much relaxed to contract and remain contracted. Stimulants also excite contraction, but the latter species of contraction very soon subsides, and some of them leave the system evidently weaker. The principal use of astringents is to act on the capillary system of blood-vessels, and on the secreting order of vessels of different glands, to lessen their power of secretion in disease. It is pretty evident that this effect is derived solely from their influence on the stomach, and through the medium of this organ by a kind of sympathy on remote parts. This class of substances, particularly the first enumerated, have considerable tonic power, whilst the latter exert some degree of stimulus, with a superior share of astringent effect. Some of these astringents act more quickly and universally than others, and the effect of these is sooner lost; opium, alum, port-wine, catechu, and ipecacuanha are of this tribe: whilst simpler vegetable astringents repeated at regular intervals act more uniformly, produce less stimulus, and leave a more permanent impression; these are infusion of roses, tormentil root, gumkino, catechu, and oak-bark.

Having offered this illustration of the operation of astringents, it might be expected that I should enter upon a detail of those states of the system to which they are more immediately applicable, but this would lead to an irksome and fruitless dis-

cussion; in fact, the diseases which indicate them are but few, principally diarrhœa; and the experience of most persons has taught the mode of administering the first division of simple astringents, viz. isinglass, hartshorn shavings, sago.

I am next to describe the medical properties and application of a very important class of remedies, viz. Narcotics and Sedatives.<sup>33</sup>

The following articles have generally received the title of Narcotics or Sedatives, although their action is by no means simple, and they are classed rather heterogeneously, but most of them have ananodyne property. Opium, hyoseyamus, cicuta, or hemlock, digitalis, and wine. This class of medicines may likewise be regarded as the most powerful antispasmodics, allaying preternatural nervous irritation in any part of the body. The mode in which the preceding effects are accomplished by narcotics is in general by superinducing a degree of stupor and insensibility, as well as rendering the pulse slower. Opium contributes to these effects as well as

<sup>33</sup> It is highly desirable in disease, that we should possess sedatives, which would in all cases diminish excess of action simply, without producing any other effect. The only positive means of restoring the healthy equilibrium, as far as respects the force of the circulation at present recognized, are bleeding from the system, or from a part, and digitalis; but each of these requires the utmost caution in infancy, and the former in particular the greatest promptitude.



wine, and the former diminishes the sensibility in a more eminent degree than the irritability. We are principally however to remark, that where they produce sleep, it may be considered for the most part as mere insensibility to external objects, and not rest either of the body or mind. Great perplexity and disappointment have arisen frequently in the practice of medicine from employing anodynes to produce sleep. In the adult, it is well known, that many constitutions are so deranged by the exhibition of an anodyne as to fall into a state of delirium bordering on mania ; and even in infancy spasmodic effects, or convulsions, at other times extreme heat, feverishness, and irritability, are excited by a small dose of opium.

It is too notorious a fact that opium is exhibited with little discrimination to infants frequently in very trivial cases ; and I have detected too many serious consequences resulting from this practice to forbear pointing them out. It is no uncommon custom with those females who profess to take the charge of children to administer soporifics, if the infant appears at any time in pain, has a violent fit of coughing, or enjoys but little natural rest. Very distressing blunders are thus frequently committed, and powerful medicines employed, sometimes through mere accident, which cannot be taken without the greatest risque of endangering

the infant's life. Where an immoderate dose of opium has been inadvertently exhibited at this early period, it does not prove fatal for several hours ; but during this interval the patient falls into such a state of irritability as could hardly be conceived ; a state of apparent agony. The pulse is extremely irregular, sometimes rapid, and then slow and intermittent, and the least touch causes a retraction of the part, and a spasmodic affection ; foaming at the mouth and coldness of the extremities ensue, with considerable dilatation of the pupil of the eye for an hour or two, until the child expires. The most powerful remedy in the first instance is a pretty strong emetic of white vitriol or sulphate of zinc, the dose of which must be regulated according to the age of the infant, and after it has freely operated, as much lemon juice should be swallowed as can fairly be introduced into the stomach, every half hour or less, until it evidently diminished the spasmodic effects. Afterwards immersion in the warm bath should be resorted to, an active purgative injection given, and in case of approaching recovery, some volatile stimulating medicine should be employed internally every four or five hours, viz. small doses of æther, or the volatile spirit of ammonia, until the regular functions of the system are gradually restored ; and the subsequent disposition to lethargy should be counteracted by frequent gentle agitation.

I have, on several occasions, succeeded in the restoration of children who had taken considerable doses of opium by the preceding plan of treatment; but these cases always require the most unremitting patience and attention.

The usual medicines given with a view of producing sleep, or alleviating pain, are syrup of white poppies, Godfrey's cordial, Dalby's carminative, laudanum, and paregoric elixir; of these the most innocent as an extemporaneous medicine is the syrup of white poppies<sup>34</sup> for the relief of simple pain in the absence of fever, or violent and long continued efforts to cough, without any expectoration following.

It would be difficult to form a conjecture of the quantity of opium sold annually to the venders and proprietors of quack medicines in this city. From a report which appeared in the *Edinburgh Medical and Surgical Journal*,

<sup>34</sup> The dose of the syrup must vary according to the age of the subject, and the urgency of the symptoms for which it is required; under four months the dose should not exceed half a teaspoonful; but within the term of twelve and sixteen months a moderate sized teaspoonful may be allowed. It is the best practice however with all active medicines entrusted to the care of persons unacquainted with the human frame, or but little conversant with the operation of articles of this class, to commence with an inferior dose, and to repeat it at discretional intervals. The salutary effects of an opiate are frequently more obviously produced by blending with it a few drops of antimonial or ipecacuanha wine.



some little time since<sup>35</sup>, it appeared that the quantity of opium and Godfrey's cordial retailed to the poorer class of that town in one year, as stated by Dr. Clarke of Nottingham, amounted to two hundred pounds of the former, and above six hundred pints of the latter, of which he has calculated every ounce to contain one grain and a quarter of opium, besides much essential oil, and a sufficient portion of spirits of wine to dissolve them. This physician observes, that the mortality among infants in that town is well known; nor would it be too large a proportion if one-fourth was attributed to the abuse of opium.

The great difficulty in ascertaining the expediency of giving anodynes makes it in most cases desirable to obtain the prior sanction of some medical practitioner. In almost every instance of difficult respiration, and sparing evacuation from the lungs by expectoration, scarcely any preparation of opium alone can safely be trusted during the term of infancy; its deleterious effects under these circumstances are almost instantly perceptible. Another mischief commonly induced by this medicine is constipation of the bowels, which alone is often succeeded by very unpleasant symptoms. In addition to these inconveniences, opiates occasion a contraction of the capillary vessels of the skin, which is gene-

<sup>35</sup> For July 1808, page 271.

rally discovered by a peculiar sallow cast of countenance; and they are found to check or suspend many of the necessary excretions of the system. On these accounts it will not be expected that I should be forward in the recommendation of any particular preparation of this class<sup>36</sup> to unskilful persons; the serious consequences that follow the practice already alluded to as a part of the system of the nursery, (which cannot be too strongly reprobated) and the danger of erring in the various stages of disease, will be a sufficient apology for restricting the administration of opiates to medical superintendence.

I shall now proceed to point out the advantages that may be anticipated from the Warm bath, Fomentations, and Leeches, as these occasionally constitute no inconsiderable part of the medical treatment of infants. In recommending the warm bath, it is necessary that the temperature of the water should seldom fall much below 85° or 90°, nor often exceed 100°. The infant is to

<sup>36</sup> Of late years an extract possessing considerable narcotic powers, obtained from the English poppy, has in some instances been found equally efficacious with the foreign opium, and it is not found to disagree with the bowels, or disorder the head so much as the latter, which are material objects in the exhibition of an opiate to children. It is therefore better adapted for a tincture, where we wish to employ opium in solution at this age: strength is estimated in the proportion of six to one of the foreign opium.

be immersed as high as the neck, and retained in a fixed position by an assistant; and the heat should be prevented from being too soon dissipated by surrounding the infant and the machine with flannel. The proper length of time to persevere in the process is eight or ten minutes, and the necessity of its repetition must vary with the circumstances of the case. In some desperate cases of convulsions we may persist in the remedy a quarter of an hour, adding a fresh supply of hot water in the intermediate period, until universal relaxation supervenes. Sometimes the semicupium, or half immersion, will supersede and answer every intention of a universal bath; but this is resorted to in trifling cases of indisposition. In all examples of eruptive fevers suddenly retreating, but especially in cases of measles, where the skin is sometimes partially affected, and the infant labours under symptoms of oppression and inflammation of the chest, the warm bath is an invaluable resource. In other instances of violent affection of the lungs, with difficulty of breathing, or inflammation of the bowels, after the application of leeches or the cupping instrument, it is almost unnecessary to advert to the singular efficacy of this remedy. In dysentery, or diarrhœa accompanied with severe spasmodic pains, or in obstinate consti-



pations, after the use of a clyster, the good effects of the warm bath are very obvious; the great benefits which are often derived from it cannot therefore be too highly appreciated, and there can be little doubt that many an infant has been rescued from imminent danger entirely by the prompt use and repetition of this remedy.

Another powerful means of relief, although a more partial one, acting by vapour, is that of fomentations; whether they act by their medicinal properties, or by heat alone: although it would appear from the superior efficacy of poppies that they act conjointly. In many cases of internal inflammation, after the necessary evacuations from the system by bleeding and cathartics, fomentations act with peculiar success. The most common vegetable substances employed are chamomile flowers, the leaves and flowers of wormwood, the heads of the large white poppy, white briony root, and marsh mallows. They frequently seem to operate most powerfully when united; but any two of them, especially chamomile flowers and poppy heads, are sufficiently efficacious, and where we would confide in the virtue of a fomentation in any internal inflammation or severe spasmodic affection, the addition of a small teacupful of brandy, or any other spirit, will greatly enhance its benefit. In all cases we should avoid making

the patient wet during the process, by which means evaporation and cold on the surface would be soon generated, and thus defeat the salutary object of the remedy.

The remaining topic of inquiry which will terminate this chapter respects the use of leeches; and the public in general are so fully acquainted with their advantages in local and universal diseases, that it is scarcely necessary to awaken the interest or curiosity of the reader by going into much detail. In local complaints attended with acute or chronic inflammation, leeches afford almost the only means of extracting blood; and in infants, wherever it can be had recourse to, it is to be preferred to bleeding from the arm. The effect is not in proportion to what the animal exhausts, but to the quantity which oozes afterwards from the orifices, encouraged by the frequent application of warm water. To save time however, as leeches are often tedious in their application, and with a view of drawing blood more effectually, a very ingenious contrivance has been effected by Mr. Whitford, surgeon's instrument-maker, near St. Bartholomew's hospital; the instrument is a scarificator with a single blade, which is projected by a spring on a similar principle nearly to the common scarificator, which is too clumsy, and inapplicable to many parts. As soon as the puncture is made, a small

exhausting syringe is adapted to the part, and by increasing the number of punctures, the surgeon is at liberty to draw almost any quantity of blood he may choose<sup>37</sup>. Occasionally, when leeches are applied to the eye-lids, or any other part of similar structure which is cellular and loose, and but little occupied with adipose substance, they leave a disposition to erysipelatous inflammation, or festering, as it is termed, which may soon be removed by warm and sprituous applications, sometimes by simple Goulard, or by a dilute solution of volatile alkali in water. Sometimes, but very rarely, from some peculiarity of constitution, the bite operates like a poison on the part, and occasions much temporary inconvenience; this however is not a sufficient argument to discourage their use, although where a repetition of local bleeding was judged necessary, the instrument before mentioned would justly claim a preference. In cases of internal inflammation, never less than four, but mostly five or six, should be employed at once in the immediate vicinity of the part affected, by which means their further administration will

<sup>37</sup> There is a further convenience in this instrument, that on applying the exhausting syringe to the wound inflicted by the leech, after it has ceased to bleed by the ordinary process, we may easily obtain a further discharge, and very rapidly, according to the exigency of the case.



often be superseded, and the progress of the disease much sooner arrested. It ought to be observed, that leeches are generally inadmissible in erysipelatous inflammation, or extensive inflammation of the skin, and in inflammatory affections of the mucous membrane, and in many species of sore throat; their benefit is more conspicuous in phlegmonous or deeper seated inflammation, and in inflammation of all those membranes lining the principal cavities of the body. Before I close this chapter, I cannot avoid apologizing for the unavoidable extent both of this and the preceding, though certainly very important topics; and which in a work of this kind must exhibit a very faint and imperfect sketch of the subject. Nevertheless, however deficient in a scientific view to the professional student who has acquired information from a richer source, I hope that but little ambiguity will arise to the general reader, and that he will here have some clue to govern his conduct in the choice and application of remedies. Although the catalogue of medicines might be considered as formidable in number at least, yet I wish not to be regarded as too prone to encourage an empirical use of them, though sufficiently aware of their occasional utility when employed judiciously, and from necessity. If proper attention is directed to the previous rules for the management of infants, it

must be admitted that recourse to the exhibition of medicines will but rarely occur ; yet we should beware of that sophistical, though plausible, reasoning that would inculcate their complete rejection<sup>38</sup>: an absurdity which the smallest share of experience and accurate observation will fully expose.

<sup>38</sup> This opinion is attempted to be supported by Dr. Herdman, in a work, entitled *Discourses on the Management of Infants*, page 76—78.

ON THE  
DISEASES OF INFANTS.

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P A R T II.

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CHAP. I.

*General Remarks on the Indications of Health  
contrasted with those of Disease.*

HAVING expatiated on those points of the domestic treatment of infants<sup>1</sup> that seemed principally entitled to consideration on the score of prevention, which was intended to form no inconsiderable portion of the present work, we are now to enter upon a division of the subject, not less interesting or important, though it is feared less easily brought within the scope of general instruction, viz. the diseases of infants. The first observation which I would beg leave to impress is this, that it is so far from being true that the symptoms of infantile disorders are liable to lead us astray, that upon the whole we are

<sup>1</sup> It is no easy task to establish the criterion, or to determine the precise limits of health and disease, because the terms employed to express our ideas and feelings on this point are merely relative.



less in danger of being misled in our opinions of them than in many of those more incident to adult life ; most probably on account of the simple corporeal character of the former. We listen eagerly to the narration of the adult, whose account is long prepared before we question him, and who is obliged to direct us by the help of indefinite circumlocution ; but in infants our decision is grounded on actual signs, where neither mistaken reference nor cross examination is required.

Every distemper, as Dr. Underwood has well remarked, may be said in some sense to have a language of its own ; nor do those of children speak less intelligibly than those of adults. The first glance of an infant's countenance is frequently sufficient to inform us of its actual health or indisposition ; as it is the grand index of the mind from the earliest dawnings of intellect, so it generally helps to point out the state of the bodily functions. There is more or less of a characteristic vivacity in the eyes, which in sickness are more dull or suddenly dejected, with some degree of laxity in the eyelids, or apparent vacuity of perception ; and frequently on the approach of illness, a darkish blue or faint livid semicircle around the lower lids. Sometimes the pupils are considerably dilated ; this may be a natural circumstance, and if so is more observable in fair children who have light bluish eyes ; but where it is discovered as

an early mark of disease, it either betrays some affection within the brain, or an unusual want of healthy irritability. Any great degree of stupor, with increased vascularity of the white or opaque cornea, together with other marks of acute illness, for the most part denote preternatural determination of blood to the head. There is more or less of floridness in a healthy countenance, and perfect rotundity of features, with a ready propensity in the infant, when free from bodily infirmity, to express some degree of delight by smiling. As the child advances in growth, the smile is converted into a laugh long before it can have acquired ideas of absurdity, turpitude, &c. The late Dr. Hartley, who was singularly ingenious in metaphysical reasoning, and fond of tracing our associations from the earliest dawn of mental character, and of ascribing them to a mechanical cause (although the latitude of his principle is far too extravagant) was of opinion, that laughter, which is only an excess of smiling, was originally produced by a certain titillation of the skin; and this is obviously in some degree the case with infants, as nurses know by touching their sides, or soles of the feet, and many other parts, in order to please them<sup>2</sup>. Surprise also without contact

<sup>2</sup> It is unnecessary to remark, that the same cause is inadequate to produce the same effect in any other animal; yet, although the brute creation are destitute of

will excite laughter, which again may be heightened to such a degree of shock as to induce crying, more particularly if the child's irritability is increased by disease. As the feelings of infants are simple and perfectly undisguised, we have a better opportunity of tracing these effects to their proper source; though it is extremely difficult to explain the essential difference that characterizes man from all other animals in the physical mode of expressing the language of passion. Dr. Hartley seems to have made as near an approach to truth in his method of illustration as the subject at present is susceptible of<sup>3</sup>; but in this instance we must be contented to amuse ourselves with a mere hypothesis, until we can acquire a more scientific key to unlock our sensitive and intellectual operations. His attempt at explaining the original cause of shedding tears from grief and corporeal pain is far more embarrassing; but it will not admit of investigation without much digression from the present subject. In a state of health there is no peculiar expression of any individual muscle, the whole being thickly covered with cellular substance; even the angular marks, or features of laughter or of shedding tears, still their respective gestures are not more equivocal or less expressive of pleasure or distress.

<sup>3</sup> See this author's *Observations on Man*, vol. 1, sect. vii. p. 253.



tures of the joints, in many parts are merely discovered by dimples. The skin is uniformly smooth and firm, frequently mottled, and of moderate temperature, without any degree of moisture or clamminess; on the contrary, during sickness, especially of a lingering kind, it is lax or shrivelled, of a pale or sallow cast, and easily drawn into folds. When the heat of the skin is raised by fever or any other acute disease, there is often a permanent degree of redness in infancy, so much so as to resemble scarlet, and frequently a spotted appearance like a rash, especially during the severer intervals of indisposition.

As most infants in health naturally sleep much, and with considerable soundness, we may generally suspect something amiss when they are subject to watching or starting, and appear frightened. These symptoms seldom occur but in consequence of some present indisposition, or may be regarded as a certain prelude to approaching illness, or as a criterion of irritation and pain.

The heads of children are often greatly disproportionate to the same part in an adult, and yet this may indicate nothing preternatural; but where the<sup>4</sup> anterior and posterior fontanelles

<sup>4</sup> These are styled in popular language the moulds of the head.

remain open for a considerable time during the latter progress, or beyond the full term of teething, this phenomenon usually denotes some degree of weakness or imperfection. If the head is peculiarly large, with a prominence of the eyes, or an inability to support the head after a certain age without inclining it against the nurse, with a degree of stupidity, dilated pupil, or vacancy of look, these may generally be regarded as characteristic signs of hydrocephalus, or water within the head. It cannot perhaps be affirmed, that in health a child will not sometimes direct its arms or fingers towards the face or head to rub or pick itself, but we find in disease this sign frequently present, and it will often denote indigestion, or the presence of worms; this action is often remarkable in the acute stage of hydrocephalus, and at the commencement of inflammatory affection of the membranes of the brain, and particularly in the marasmus, or wasting away of infants. It is very singular that the child will very much refrain from this action while we are administering any medicine to relieve the bowels; which shews how far instinct may conduct us to the true knowledge of the source of these complaints. Crying, starting in their sleep, or moaning, will frequently indicate a considerable share of irritation in the alimentary canal. Sometimes an infant will cry vehemently and incessantly for five or ten minutes,

and throw itself into various contortions, or draw its legs towards the abdomen; where those symptoms are observed they generally point out some disorder in the bowels.

With respect to the pulse, as it may be expected to inform us of the degrees of danger in disease, very little can be discovered at this period of life descriptive enough to lead to any useful or infallible prognostic. The pulse of an infant in health varies from about ninety to one hundred: it is not limited so precisely to any uniform standard as in the healthy adult, which seldom exceeds seventy or seventy-three, but the least indisposition in the irritable habit of an infant will raise the pulsations to one hundred and forty or one hundred and sixty, increasing until it is difficult to number the vibrations. In this case we often perceive a peculiar thrill in the artery, especially if the disorder is inflammatory. A rapid pulse therefore, however alarming at a more advanced period of life, during infancy cannot be regarded exclusively as indicative of danger. An intermission in the pulse may likewise be clearly discovered occasionally, especially in affections of the chest; this however may occur in other cases without exciting alarm; but towards the decline of diseases where great universal debility prevails, it cannot be looked upon as destitute of danger. In adult life there is a singular phenomenon relating to intermission of



the pulse that would scarcely be anticipated, whether it occurs in infants I have not yet ascertained. A pulse which is naturally intermittent without the least sign of indisposition, will become perfectly regular at the approach of disease, and will therefore be the most certain criterion of health or disease in that instance which could be discovered. Other information respecting fulness or smallness of the pulse is equally accurate in early life as at any future period, though these are still terms of comparison with the actual size of the artery in health, and will vary in disease according to the relative exhaustion or strength of the individual, or the progress of indisposition.

As to the state of respiration in infancy, there is a perfect uniformity in health in the number of inspirations and expirations; whereas, when they are irregular and much hurried, which is easily discovered by a little attention, we may generally infer some degree of constitutional disorder, excepting in the instances of surprise or other mental affection, or in the case of active exercise. Sometimes considerable oppression manifests itself with a rattling noise, or wheezing in the throat, as a very early symptom of disease, particularly during the presence of a cough. In children of a very full and bloated appearance, where there is but slight pulmonary affection, unless

some degree of expectoration is soon promoted, this rattling symptom within the trachea or wind-pipe increases to an alarming height; it then takes the popular title, though very absurdly, of rising of the lights. Difficulty of breathing is one of the most constant and early symptoms of disease in infants; from the application of various exciting causes, in consequence of the extreme irritability of the vascular system, this symptom may either point out topical affection of the lungs and trachea, or it may be considered as no other than a common consequence of increased circulation in fever, or inflammation of any important organ of the body: it is a frequent occurrence also in painful affections of the bowels, more especially in dysentery, and in inflammation of the peritonæum, the smooth and delicate membrane enveloping the principal portion of the viscera of the abdomen. Sometimes the secretion of mucus from the trachea and inner membrane of the lungs is so much increased, as to excite a constant wheezing in the throat, and the infant will appear at intervals quite livid, from the passage to the lungs being almost entirely choaked up with phlegm; this symptom is universally characteristic of danger, and is actually the last symptom that precedes death in the instance of hydrophobia.

The tongue in health is moist, and of a pale

red aspect, with frequently a whitish substance in the centre or posterior part, loosely attached, and arising very frequently from the coagulable parts of the milk, but which is sometimes mistaken for a fur. When the infant is very weakly, and in chronic or lingering diseases, the small papillæ of this organ are more prominent and numerous; sometimes there is a smooth glassy surface with but little salivary secretion, a symptom which indicates often extreme debility. A dirty brownish white, or yellowish fur, frequently denotes derangement of the digestive organs, but a white uniform crust upon the tongue is characteristic of general inflammation. In inflammatory affections of the thorax or chest, the white is more intense than in similar morbid affections of the abdominal viscera; but the observer must be prepared for infinite gradations beyond the power of any verbal description to pourtray. A plentiful flow of saliva, and redness, with increased sensible heat and tumefaction of the gums, are almost invariably found to accompany or precede the cutting of teeth, which is so evident as not to escape many intelligent nurses; but we frequently observe a redundancy of saliva without any sensible increase of temperature in infancy, which may often be ascribed simply to the irritable nature of the salivary glands, or it may serve to elucidate some



sympathetic change in the state of the stomach ; however, in the greater proportion of these cases, I believe the child requires no particular medical treatment. The transitions from universal heat to a sense of cold are extremely rapid on many occasions in infancy, which is an additional proof, amongst many others, of the connection of the generation of the principle of heat with the state of the vital powers, independent of the chemical effects of the air inhaled. These constitute most of the stronger features of disease contrasted with health in infancy ; besides which there are various slighter appearances that are more or less difficult to describe, according as each individual disease is more strikingly or faintly marked, and many of these can only be taken collectively. It would be therefore useless and foreign to the object of this treatise to furnish any other than a general but faithful sketch of the diagnostic signs of health and disease, subject in its interpretation to such limitations as all human attempts to generalize the materials of observations, or to draw rational or practical inferences from so variable a source, must necessarily incur.

## CHAP. II.

*On Affections of the Bowels, Indigestion, and Diarrhæa.*

IT is impossible on the present occasion to treat of the diseases of children with any view to systematical arrangement, a plan which would not only abridge the usefulness of a general treatise, but interfere with the author's principal object, which is to describe those complaints of most familiar occurrence, and such as are generally more or less connected with danger in their progress. The diseases to which infants are principally exposed, living as much as possible under natural circumstances, are, small-pox, chicken-pox, measles, and hooping-cough, together with some cutaneous eruptions of but little moment. The common infection of fever rarely exerts any specific influence on them; nor has exposure to cold the same pernicious effects with which it is attended in more advanced life: but they are more liable to be affected with the topical effects of cold as displayed in chilblains, or partial indurations of the glands of the neck or other parts. Very young infants rarely are attacked with erysipelatous or ulcerated sore throat, or with true scarlatina, though where

it is epidemic or of a malignant sort, those that are affected with it mostly sink under it. Upon the whole we may venture to state, at a very early period of life, that the causes of disease generally have comparatively but trifling effect, infants not being endowed with that specific irritability which renders them obnoxious to certain stimuli; but they mostly act as simple stimuli, so that their principal complaint is indigestion. This gives rise to acidity in the stomach, a circumstance easily ascertained by exhibiting to them at that time any species of vegetable food; the child is soon violently gripped, and draws up its thighs; it is at the same time exceedingly pale, and the paleness is more evident at one time than another. This indisposition is mostly accompanied with violent fits of screaming, and the milk is frequently rejected in a coagulated state; purging follows, the fæces assuming a bright yellow colour, which is soon converted into green. When the disease is further advanced, and the evacuations put on a permanent green appearance, great frequency of the pulse, and other symptoms of irritation, vulgarly termed fever, supervene. Where the pulse exceeds one hundred and sixty, when it becomes difficult to measure, it is not very uncommon for partial convulsive contractions to ensue, and without the strictest attention the infant is placed in imminent danger.

It is true, that a purging of this description,



accompanied with many of the same appearances, happens during teething; but in that case it is seldom fatal, more especially if the operation of lancing the gums is had recourse to, with the occasional administration of a dose of calomel combined with ipecacuanha. Upon the whole, the treatment of diarrhœa is necessarily very different at these two periods; in the one case it being the essential disease originating in indigestion; in the other, a mere symptom of an important change in the animal economy. This acidity, in conjunction with purging, is the principal disorder to which infants in the country are liable, and it commonly admits of an easy remedy, provided it is attended to in the first stage; but if it be allowed to proceed so far as to occasion inflammation of the intestines, it then becomes very dangerous. In the first instance we should exhibit a dose of rhubarb and magnesia, or soda, in sufficient quantity to empty the bowels thoroughly; afterwards we may give within short intervals a few grains of prepared chalk, or, what is preferable, a teaspoonful or two of the chalk julep of the London dispensatory with a little mint water; and if this absorbent earth should prove too astringent, we may then blend with it half a grain of calomel, or four or five grains of calcined magnesia, so as to obtain at least two or more evacuations in the twenty-four hours. Some alteration should be made in the diet at this period; flour slowly baked

for several hours till it is reducible to a soft greyish powder, and combined with cow's-milk, afterwards boiled to the consistence of a thin custard, is extremely nutritious. Sago made thin may likewise be interposed with advantage. Occasionally weak veal broth mixed with mutton or beef tea, to which a little mace should be added, furnishes very substantial nourishment. Where the child is very young, it is preferable to mix the beef tea or veal broth with a portion of milk. These means are frequently sufficient to remove the disease, provided the infant has the advantage of good air; but in this city dysenteric appearances occasionally ensue, the evacuations become sanious and slimy, and small in quantity, with scarcely any vestige of bile, and intermingled with coagulated blood. In this situation of the patient, very small doses of tartarized antimony, or ipecacuanha, so as not to produce vomiting except in the slightest degree, are highly useful, besides rhubarb and magnesia, to clear the alimentary canal. We are to remember, however, that the stomach of an infant is at all times much more irritable than that of an adult. One-sixteenth or one-eighth of a grain of tartarized antimony is sufficient for a child of four or five months, or one-fourth or half a grain of ipecacuanha. Occasional doses of calomel should afterwards be exhibited, until some improvement in the

fæces follows; and we should employ alternately mucilaginous glysters, particularly from some animal substance, which will defend the interior surface of the intestines from the stimulating quality of the secretions, as well as afford something to be evacuated. By these means we often are enabled to check or entirely remove the disease; but if these remedies should prove ineffectual, and the purging continue with increasing debility, a small dose of laudanum may be added either by the stomach, or given in the form of injection. One drop of this medicine, prepared properly, is a considerable dose for an infant under six months; half a drop is frequently found sufficient.

During the prevalence of dysenteric symptoms the infant cannot be kept too warm; and a decoction of poppy heads with camomile flowers, or the latter only with the addition of a little brandy, will prove a very serviceable fomentation; which should be renewed every two or three hours, or oftener beneath the bedclothes, should pain on pressure, or any degree of tension of the abdomen, arise. This plan need not supersede immersion in the warm bath, heated to 90° or 95° of Fahrenheit's thermometer. Leeches also at this crisis are highly useful, and often indispensable; four or five may be applied to the abdomen wherever pain on pressure is most easily excited; the orifices should be allowed to bleed



freely; but the symptoms more immediately indicating their use ought certainly to be submitted to the judgment and discrimination of the medical practitioner.

Another frequent form of diarrhœa in infants is known under the popular title of watery-gripes, and is a very obstinate and sometimes formidable complaint. It takes its appellation from the thin, pale, and often acrimonious nature of the fæces, which are seldom tinged with bile; sometimes, however, the evacuations are of a darkish hue and very fœtid. This kind of purging recurs in general the instant after any liquid is swallowed, and with very severe griping; at other times with mere flatulence, but the patient in a short time becomes dreadfully emaciated, and of a deadly pallid aspect. It is liable to be confounded with common diarrhœa by nurses who are not conversant with the disorder, but by the intelligent and experienced it is so well understood, that it is hardly necessary to enter into its detail. The principal thing necessary will be, therefore, to point out the most appropriate medical treatment. A general rule to be observed with every species of diarrhœa in childhood is to refrain from producing a sudden suspension of the disease by restringents, until we have administered a dose or two of such purgative as will stimulate the muscular coats of the intestines to dislodge any of-

fensive fæculent matter, which by its retention is often the means of keeping up a copious secretion of watery mucus from the exhalants; a symptom connected with much irritation and exhaustion commonly in this distemper. Saline purgatives would only add to this effect; the best composition seems to be a mixture of rhubarb, calomel, and ginger, four or five grains of the former, a grain and half or two grains of calomel, and a grain or two of ginger, which should be repeated in the interval of three or four days, or sooner, if the first dose should have operated but slightly. Afterwards small doses of ipecacuanha wine, four or five drops, with occasionally a drop of laudanum administered at intervals of six or eight hours, will very frequently remove the disease. This form of diarrhœa has often been considerably relieved by an emetic, in which case the ipecacuanha wine is to be preferred; about a teaspoonful or less occasionally will suffice, and after its exhibition a warm carminative or cordial mixture, such as small doses of the chalk julep, warmed with tincture of lavender or aromatic tincture, with a few grains of rhubarb, will afford essential relief. In all probability the chief virtue of the emetic consists in exciting an inverted action of the alimentary canal; still, whatever may be its precise mode of action independent of its direct influence on the stomach, it

is certain that eminent good is often derived from its exhibition.<sup>5</sup> On these occasions groundless and frivolous objections have often been started by the timid and anxious nurse against employing an emetic, from an anticipation of its debilitating effects ; which antipathy should be opposed by keeping in view the practical experience of its obvious utility. In protracted cases of this form of diarrhœa, when the infant has been very considerably reduced, four or five drops of the tincture of catechu or Japan earth, or a grain or two of extract of logwood, or the same dose of gum kino may be added with advantage to the chalk julep ; and frequently after having succeeded in restraining the purging, we shall be obliged to resort to strengthening bitter remedies, and a very restorative plan of diet, avoiding the exposure of the subject to either the influence of cold or moisture. It deserves to be mentioned, that a full-sized blister to the abdomen has often afforded essential relief on the failure of the usual medical treatment ; indeed, the torpor of the principal organs of digestion is so very conspicuous in lingering cases of this disease, that upon every rational prin-

\* <sup>5</sup> When the evacuations from the bowels are liquid or watery, sometimes brownish and streaked with blood, Dr. Armstrong has recommended the repetition of antimonial vomits every six or eight hours till the stools change their appearance ; this advice, however, appears extremely dangerous.



ciple some powerful adventitious stimulus is clearly indicated. Where either form of this disease occurs in a city or large town, the patient's convalescence is sooner effected by change of air, especially that of the country, where the temperature of the weather is not too severe. It is scarcely necessary to observe, that we should scrupulously refrain from giving tea, malt liquor, thin watery slops, or acids, during the continuance of the diarrhœa; a little beef tea may be administered, but no solid animal food, and rice-gruel warmed with cinnamon, or any other grateful spice; sago, with a small proportion of port-wine, should often be allowed in the convalescent stage; in short, great attention must be directed to the articles of food.

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### CHAP. III.

#### *Of the Thrush, as it occurs in Infancy.*

THIS is one of the earliest diseases, of most familiar treatment, and of which it is necessary to say but little. It appears chiefly peculiar to

infants within the first month, from inattention to the state of the alimentary canal, or from some error of diet in those who are nurtured without the breast, or amongst children who are brought up in foul air. There is a singular circumstance belonging to this disorder, that certain families under almost any regimen or treatment shall be affected with it at the usual period, whilst others, on the contrary, where we should least expect it, shall totally escape, which proves that we are not always acquainted with its remote causes. From the symptoms commonly connected with it, though in many instances it is entirely of local origin, as far as we can ascertain, yet we may frequently prognosticate that it is the effect of debility, and the treatment to be employed is extremely simple, for the most part of a topical kind, and so obvious, at least to nurses, that the majority are confident of curing it, and very often refrain from making any express communication of the disease to a medical attendant.

In this country the thrush of infants is very rarely a fatal complaint where it occurs as an original affection; but whenever it makes its appearance towards the decline of other diseases, as erysipelas, diarrhœa, or any alarming acute affection, it then puts on a critical shape and portends great danger.

On some parts of the continent, in France and Germany, the thrush often terminates fatally;

but this has been found to depend in general on epidemic contagion, and is far more destructive in large hospitals than in other situations. The disorder in medical language takes the title of *aphthæ*, a term expressive of burning heat, and as such it is recognised not only by the nurse who may suckle the child, but by the tenderness of the parts affected, which is plainly indicated by the infant. It generally commences about the inner angles of the mouth, then the tongue is pretty universally covered with it; very soon the inside of the cheeks and the greater part of the fauces share a similar fate, during which time the infant experiences considerable difficulty in the act of sucking, and frequently occasions excoriation and inflammation of the surface of the nipple.

Amongst the precursory symptoms, we may remark that the infant's voice grows feeble, shrill, and hoarse, the respiration is somewhat hurried and difficult, the pulse is extremely quick and small, the mouth, tongue, and every part of the fauces are hot and dry, the skin parched, and the child languid and spiritless. In some few instances the infant is so completely disqualified for exhausting the breast, from the excessive heat and tenderness of the mouth, that it dies prematurely before the thrush has well made its appearance; this occurrence is, however, extremely rare.



The disease shews itself in the form of a white fur, that appears somewhat like an exudation of coagulable lymph, overspreading the surfaces of the membrane wherever it is found. When examined more minutely, it puts on rather a villous appearance, and its duration varies from the period of four or five days to ten days or a fortnight, seldom, however, continuing so long if early attention be bestowed upon it; and as it leaves the parts, we remark to a certain extent a degree of universal redness, and in many cases a projection of the smaller papillæ about the extremity of the tongue, conveying an idea of this part being then endowed with a more exquisite sensibility. Occasionally the white fur degenerates into a brownish hue, which is an unfavourable appearance, and more characteristic of general weakness than any other, indicating at the same time the use of more vigorous and active remedies, such as a desert spoonful of the decoction of cinchona or Peruvian bark with cordials three or four times a day, with a few drops of tincture of lavender, and a little port wine; or the infusion of roses in a similar dose, with a drop or two of either of the mineral acids. As the complaint leaves the mouth and fauces, it is common to observe an increased redness about the anus or verge of the bowel; and this has been imputed by many persons, even medical men, to the progress of the disorder through the whole

course of the alimentary canal ; but it admits of doubt whether the thrush ever extends beyond the pharynx or œsophagus<sup>6</sup>, although, as there is a continuation of the same membranous structure here as about the inside of the mouth and fauces, it may casually pervade these parts. The redness, however, at the extremity of the bowel arises from the stimulating quality of the excretions, and needs only repeated and strict cleanliness, and that the infant be kept properly dry after every evacuation, which is easily effected by the use of a little hair powder or ceruss ; but nurses are much inclined to recommend the frequent exhibition of purgatives in this complaint, which are unnecessary and highly injurious, though superstitiously given to expel the relics of the disease from the internal parts<sup>7</sup>.

The occasional causes that have been found most to favour the appearance of thrush are, uncleanliness, evident marks of previous acidity in the stomach arising from indigestion, an unusual propensity to sleep, foul air, and a great

<sup>6</sup> Terms applied to distinct parts of the tube continued from the back of the mouth into the stomach.

<sup>7</sup> There are some persons prejudiced enough to regard the red appearance about the anus as a favourable omen in this complaint, and that a child cannot have been treated properly, or thoroughly cured, where this symptom is not discoverable ; this, however, is by no means an essential phenomenon.

superabundance of covering in close apartments. Sometimes the disorder occurs within the first fortnight after birth, where none of the foregoing causes seem to have operated; at this period it frequently gives way to two or three doses of magnesia, and some external application in the form of linctus, of which the best are a mixture of syrup of mulberries and a few drops of spirit of salt; or a dram of powdered borax to an ounce of honey, or mel-rosæ, with some absorbent earth, as bole armenic. But when the thrush is discovered at a more advanced period of infancy, greater care is required to treat it with success, particularly if the child has been weakly, or emaciated from any bowel complaint. Tonics, or strengthening remedies, will then be indispensable, such as, an infusion of columbo or angustura bark, a drachm to half a pint, with a little nutmeg or cinnamon water; of this composition a small table-spoonful may be administered two or three times daily, interposing a few grains of rhubarb occasionally, so as to preserve the bowels in a regular state. If the infant has been kept to the breast too long, regard is to be had to the quality of the woman's milk; and in the preparation of its food a caution should be given not to employ much sugar. Throughout the cure absorbent earths should be exhibited internally, and their good effect is often increased by conjoining them with a light tonic; to which end



we may employ three or four grains of prepared chalk, with two or three grains of powder of colombo three times a day, or we may use with the tonic a similar proportion of compound powder of contrayerva in any thin vehicle, proper attention being paid, as has been intimated, to the state of the bowels, which should not be suffered to remain too much relaxed.

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#### CHAP. IV.

##### *On the Inflammation and purulent Discharge from the Eyes of young Children.*

INFANTS are subject soon after birth to a disease of the eyes in this city, often apparently epidemic, termed by medical writers purulent ophthalmia, which is an inflammation in the first instance of the borders of the eyelids, sooner or later extending to the whole exterior surface of the eye, rendering the whole of the upper and lower lids puffy and vascular, and followed by a profuse secretion of pus, and a glutinous discharge from the sebaceous glands opening upon the extremities of the eyelids. The latter secre-

tion often requires considerable address to remove; but in most cases it is of consequence to detach it by frequent ablution with warm milk and water.

Occasionally this disease assumes a milder character, is confined almost wholly to the eyelids, especially the upper lid, and the coats of the eye appear to be scarcely affected by the inflammation; but in general the discharge of pus is very considerable, and the interior surface of the lids is highly vascular.

I have witnessed so many degrees of mischief and future calamity resulting from this disease where it has been left to itself, or treated in the first instance improperly, that I esteem it a duty to endeavour to point it out as simply as possible, but as particularly deserving of the reader's attention. Professor Scarpa, a practitioner of the highest eminence at Pavia in Italy, has portrayed this complaint in a very formidable and striking point of view, but, I believe, with great accuracy; for in warm climates, independent of the constitutional differences of individuals, every species of inflammation, whether internal or external, experiences such a rapid progress, that the same disease will often assume a totally different character compared with that of a more temperate climate. The disease in question appears in this country more prevalent in scenes of poverty, and has there to en-

counter not only neglect, but every opposition that prejudice can suggest.

The natural history and termination of this complaint in infancy and more advanced life appears to differ considerably in those cases where it cannot be traced to any infection. In the former it is often truly alarming, requiring the most active and vigilant circumspection; in the latter it seldom resists the ordinary applications; it observes a more uniform progress, and sooner disappears: perhaps owing to a diminished irritability of the bloodvessels. Whenever a glutinous exudation is observed to accumulate about the eyelids of infants, accompanied with a streak of redness, it may be regarded as the first step in general to subsequent inflammation. One of the earliest marks by which it may frequently be discriminated, is a difficulty in separating the lids; and when they are completely closed the eye appears somewhat swollen, and the whole extent of the lids evidently more vascular. In this stage of the complaint the remedy would be very simple when the inflammation has not been trifled with or neglected; but when stimulating and heating applications or improper degrees of pressure have been employed, it terminates in a very rapid and unfavourable manner; indeed inflammation of every part of the body experiences very sudden transitions during the whole term of infancy.



Scarpa observes, <sup>8</sup> “ that on the first appearance of this alarming disease the eyelids become instantly enormously swollen, and to such a degree that they cannot be separated from each other; that in general the internal membrane of the palpebræ or lids (so called from their quick or palpitating motion), is found converted into a villous fungous substance, similar in some degree to the lower intestine, where it is forced out and everted in children from excessive straining.”

The ophthalmia<sup>9</sup> as it occurs in this country is susceptible of three varieties or stages of inflammation, each calling for a different modification of treatment. As far as my own observation may be relied on, the first and most common includes the different degrees of that form of the disorder as it is described by Scarpa (which corresponds very much with that species termed the Egyptian ophthalmia), where the inner membrane of the palpebræ and the conjunctiva or investing membrane of the eye are prodigiously vascular, and highly distended with blood; the second, where the structure of the eye itself has perished from a high degree of phlegmon or inflammation of its substance: or, lastly, where the disease is very early distinguish-

<sup>8</sup> Scarpa, on diseases of the eye, translated by Briggs.

<sup>9</sup> Instead of the term everted, I have found upon endeavouring to separate the lids in these cases, the lower lid generally inverted and firmer.

ed by a thickening and filmy opacity of a greater or less portion of the transparent cornea<sup>10</sup>.

Where the complaint has been left to pursue its own course, or very inefficient means have been employed to counteract it (and the danger is sometimes rather insidious), or where the affected parts are not freed from the glutinous and purulent mucus continually secreted, the inflammation in three or four days, or even in less time, will be found to extend to the substance of the eye. During this crisis a thicker and more copious suppuration ensues, and in separating the least portion of the lids we discover no vestige of the usual structure of this organ, but a complete deprivation of the principal humours of the eye; sometimes a luxuriant fungus supplying their place, at other times the coats of the eye entirely collapsed, or totally altered from their natural appearance. Where the inflammation has not destroyed the proper coats of the eye, a thickened opaque film remains, in some instances completely, in others only partially occupying the region of the eye subservient to vision, so that the organ becomes at a subsequent period nearly useless; or it proves a source of much future pain and suffering, being more peculiarly exposed to all the subsequent causes of

<sup>10</sup> A term of ancient application to the eye, borrowed from a comparison of its clear transparent part with the transparency of horn, extended also to the white of the eye, which is denominated opaque cornea.

inflammation, and the child is truly an object of the highest commiseration.<sup>11</sup> Professor Scarpa offers a remark, which in this country is seldom verified, “that the fever at the commencement of the disease is smart, the cries of the infant, the restlessness and tremors of the whole body are incessant, and with these symptoms is frequently associated a vomiting, or purging of a very offensive yellowish matter.” In ordinary cases, as the inflammation advances the whole extent of the eyelids becomes œdematous, attended with a diffused erysipelatous redness, and with a thin copious purulent secretion; but frequently the parts affected do not seem to convey such acute pain as might be apprehended from the delicate structure of this organ, and there is but little general affection of the system; circumstances which probably encourage hope, improper confidence, or even neglect on the part of the attendants. The early separation of the eyelids, however difficult of accomplishment, is a point worthy of our attention; it is true that it requires tenderness and perseverance, but it affords the only means of enabling us to judge of the real progress of the disease, and of the necessary indications towards a cure. The

<sup>11</sup> It should be remarked, however, that we sometimes meet with an agreeable surprise at the decline of this formidable complaint, and find the eye much less injured than could have been suspected at the time we were first able to obtain a sight of it. Dr. Underwood has made a similar remark, vol. ii. p. 46.



inversion of the lids, particularly the lower one, is an obstacle to the mechanical disunion of the palpebræ, but the longer it is delayed the more the impracticability is felt, and this symptom is a considerable irritant to the contiguous parts, and adds to the tumefaction.

It is the nature of this complaint, particularly where epidemic, or wherever at first treated improperly, or favoured by keeping the child too hot, and superfluously covered about the head, to advance with greater rapidity, and to proceed to a more violent extent; so that sedative and cooling applications are found most successful in the first stages, such as, fifteen or twenty drops of extract of lead, or four or five grains of cerussa acetata to four ounces of distilled or rose water: this application should be perpetually renewed and kept in contact with the external inflamed surface, through the interposition of a compress of soft linen, secured on the parts by a light muslin roller applied only moderately tight.<sup>12</sup> A very common remedy with nurses on

<sup>12</sup> Where the complete separation of the lids is impracticable, and we have had sufficient insight into the nature of the complaint, or even to supersede the too frequent intrusion of attempting to detach those parts, a small quantity of the saturnine collyrium should be gently insinuated by means of an ivory syringe (the point being introduced towards the external angle of the eye), so that the preparation may pass over the whole of the inflamed surface; but great tenderness is required in conducting this operation.

these occasions is an infusion of green tea, which may prove far too astringent where they are inattentive to the quantity of the herb employed, and in an early stage of the disorder will be found to act as a stimulus on the affected parts. Others will confide in nothing but the woman's milk as an external application, which does little or nothing, excepting that perhaps it does not irritate: brandy and water has also been recommended occasionally, which is not quite so innocent. Pressure by means of a thick bandage is extremely improper, not only in a mechanical view, but as contributing to the unnecessary accumulation of heat, and checking the free evacuation of the usual discharge, which acts in some measure as a natural cure to the inflammation. Leeches to the temples at the commencement, or taking away blood, by the application of a small cupping-glass, will generally be found indispensable, particularly where the inflammation has been neglected, or has risen to any formidable height. Calomel likewise should be administered five or six nights in succession; to an infant within the month a single grain may suffice, if the child is two or three months old, a grain and a half, or two grains may be required: as the bulk of this medicine is so very inconsiderable, it may be better to mix it with a few grains of sugar or prepared chalk.

It is seldom that the inflammation experiences

any very material abatement without the use of a blister, but this will depend on its degree of violence, or the duration of the disease. A blister applied to the nape of the neck, or behind each ear, and kept open for a week or ten days with any stimulating digestive ointment, viz. yellow basilicon, or savin ointment, has been found very instrumental even as a primary means of subduing the inflammation, where only superficial parts are affected; this remedy, however, is not to be confided in but in conjunction with the collyrium<sup>13</sup> before stated, nor is it intended to supersede the use of leeches, or other modes of depletion in severe instances of the disease.

It has been strongly recommended by practitioners of the first authority<sup>14</sup> in those cases, when we have ascertained that the inflammation is limited to the interior membrane of the palpebræ and<sup>15</sup> conjunctiva, after the first shock of the inflammatory action has subsided, and the puriform secretion has followed in a more profuse degree, to instil between the lids by means of a small syringe a little of the following preparation in the worst cases every hour, otherwise six or eight times a day.

<sup>13</sup> A term employed to signify any detergent or restringent application to the eye.

<sup>14</sup> Professor Scarpa and Mr. Ware.

<sup>15</sup> The fine exterior membrane investing the whole surface of the eye without the orbit.



Take of Cupri vitriolati—Bol. armenic. of  
each eight grains.

Camphor reduced to powder, two  
scruples.

Boiling water, half a pint.

After being well shaken, and allowed to cool and separate, the liquor should be decanted for ordinary use; and should this application induce much pain, it may be graduated by further dilution, according to the exigency of the case: it is however required to indicate a stimulating property. I have had no opportunity of appreciating the efficacy of the preceding collyrium, and have mostly succeeded with a lotion consisting of two or three grains of muriate of mercury; or sometimes four or five grains of sulphate of zinc to five or six ounces of rose water, towards the decline of the inflammation, but particularly in its last stage. Where we can discover the acute inflammation to have extended already to the substance of the eye, threatening early suppuration, the operation of puncturing the anterior or aqueous humour (however apparently formidable the proposal), would sometimes afford considerable advantage. The inconveniences resulting from this operation are so few, as it would appear from the examples recorded by Mr. Wardrop of Edinburgh, that they could not be brought into comparison with the immense danger of suppuration following

throughout the substance of this organ. This proposal, however, as well as many other directions which have been advanced on this subject, must of course be entirely submitted to the surgical attendant, and can only admit of cursory notice in this treatise.

In the second stage of the inflammation, as it may have attached to the substance of the eye, or produced a condensation and opacity of the transparent cornea, a chronic weakness and considerable vascularity of those parts which were originally affected, are now superinduced; the secretion of pus in smaller quantities continues, and a gummy discharge from the eyelids. To obviate these inconveniences, particular cleanliness is necessary, as the secretion is now more stimulating; and I have witnessed on many occasions the greatest benefit from the following simple tonic and astringent application, viz. two grains of sulphate of zinc, or a grain of muriate of mercury, to four ounces of rose or elder-flower water, increasing the proportion of each mineral salt according to circumstances, with the addition of six or eight drops of laudanum. Lime water also is an excellent application through the mediation of a linen compress before explained; and blisters behind the ears in this stage of the disease will sometimes accelerate the cure.

## CHAP. V.

*On Inward Fits.*

MANY practitioners have scarcely allowed any name to these fits, and have doubted altogether their existence; yet however unimportant they may be in their effects in a general way, and notwithstanding the manifest absurdity of the popular term, which converts a simple external change of feature into an internal fit, yet the author deems it essential to describe the phenomena, in order to obviate mistake in the treatment, to guard against their being confounded with real convulsions, and to establish a more favourable prognostic of the result.

Any species of convulsion carries with it for the most part such a degree of universal alarm, that parents are not unfrequently terrified on the weakest grounds, with an apprehension of the real presence of convulsions on the loose surmises of a nurse, at a time when the infant is in good health, or so little indisposed as to be merely troubled with a little flatulence. If it may be termed a complaint, it is frequently one of the earliest in infancy, occurring usually within the first and second months. Dr. Armstrong has given so accurate and simple a state-



ment of inward fits, and so consonant to general observation, that with the exception of his theoretical reasoning and arrangement of the subject, it is scarcely necessary to deviate, or make any addition to his illustration of them. The symptoms are as follow: the child appears commonly as if it was asleep, except that the eye-lids are not quite closed; and if we observe them narrowly, the eyes will frequently twinkle, with the white surface of them directed upwards, sometimes inclined towards the inner angles of the orbit. There is a kind of tremulous motion of the muscles of the face and lips, which occasions something imitative of a simper or smile, and at other times almost the appearance of a laugh; frequently the infant will utter a sudden scream. As the disorder increases, the breathing is a little interrupted, the nose appears contracted, with a darkish circle about the eyes and angles of the mouth; sometimes these parts assuming a livid hue, alternately coming and going; but the spasms seldom affect the extremities or trunk of the body, except the child struggles from any violent effort to discharge wind, and when it has accomplished this, it sleeps afterwards with more soundness and tranquillity. If we might indulge any conjecture of the actual state of nervous sensibility during these phenomena, this slight spasmodic affection is attended with no degree of pain; on the con-

trary, the expression of the features would rather seem to border on a simple nascent feeling of pleasure: at most, it denotes restlessness or disturbed sleep. As the respiration is evidently more affected in some instances than in others, severe spasms occasionally manifest themselves, and under these circumstances the affection has been termed in Dr. Underwood's work, *Chronic Croup*, although the term appears highly exceptionable, (unless *dyspnœa*, or difficult breathing, and *croup* are synonymous,) as being in no respect analogous to the disease that I ever had an opportunity of discovering. In general we find that the infant starts, especially if the nurse attempts to move it hastily, or if any noise is excited near it; thus disturbed, it sighs or expels wind, which gives instantaneous relief until it relapses into the dozing. These phenomena frequently disappear gradually and spontaneously; otherwise, provided nothing is employed to remove them, they may degenerate into a continued drowsiness, or terminate in vomiting, or in the discharge of sour, curdled, and green stools, diarrhœa, a degree of feverishness, or even real convulsions. These symptoms have been usually regarded as gradations of the same disease, deriving their source from one origin, viz. the state of the alimentary canal.

Inward fits most commonly appear after a

child has fed very heartily, or sucked with extraordinary avidity, and has been immediately laid down to sleep, without having experienced the usual relief by hiccough or flatulence, and having been subjected to no kind of gentle agitation afterwards. At the commencement of these symptoms, a dose of calomel with a slight aromatic will mostly supersede any further remedy; a grain and half therefore of calomel, with an equal weight of ginger, and two or three grains of rhubarb, should be given in a little pap, provided the infant be not relaxed already in its bowels; otherwise a gentle puke, twenty-five or thirty drops of ipecacuanha wine, may be administered with great benefit. Where a cathartic is at all indicated, (as the disorder would sometimes appear to originate in constipation of body), it should be repeated discretionally with increase or diminution of quantity according to the obstinacy or urgency of the case.

Having thoroughly emptied the alimentary canal, it will sometimes be necessary to employ some carminative by way of stimulus, and none will succeed better than ten or twelve drops of tincture of lavender, with four or five of the spiritus ammoniæ compositus, or three or four drops of æther in a teaspoonful of water, which may be repeated two or three times a day. Our attention, however, should be particularly



directed to the state of the infant's excretions, and its propensity for sleep; and what is equally important to prevent a recurrence of the spasms; a more consistent and limited mode of feeding it should be adopted, as well as care directed to proper exercise at regular intervals. Should the digestive function be performed with irregularity, it will be right to exhibit a small quantity of some bitter watery infusion, such as, columbo, or quassia with orange-peel, and a few drops of rhubarb wine. Upon the whole, one would consider these spasms principally deserving of notice from the affinity which they may be thought to bear to convulsions; notwithstanding the affection is trivial, the former will recur without any manifestation of danger, and they seldom or ever terminate fatally: whereas in cases of real convulsions, where the infant escapes, the shock is often felt for a considerable time.

## CHAP. VI.

*On Convulsions.*

WE have now to investigate a disease peculiarly incident to children, especially in populous and crowded cities, producing great fatality, and which at present is but imperfectly understood.

The annual report of deaths in the metropolis from convulsions is so formidable, even admitting the extreme incorrectness of the parochial registers, that it becomes a subject of increasing interest, and peculiarly worthy of our attention. And the more closely we investigate the origin of this affection, the better we shall be convinced that this species of early danger is frequently to be imputed to the vitiated state of domestic manners amongst the less enlightened classes of society.

The author is, however, too well persuaded of his own inability wholly to supply the deficiency of others on the subject of this distressing malady ; and must therefore be contented with the task of merely giving a description of some of its more striking phenomena.

Convulsions are to be regarded frequently as a mere symptom of some disorder going on in

the alimentary canal; they happen during teething, and in more advanced childhood from worms. These circumstances have induced medical writers to make a distinction into symptomatic and idiopathic convulsions; where in the former case they proceed from some obvious irritation that has previously manifested itself, the spasms being of secondary origin, or where they constitute the primary affection peculiar to the state of the brain and nervous system. This difference, however technical or arbitrary it may appear, is founded on the natural history of the disorder, and is of considerable utility with a view to its immediate treatment: it is not however easy to make the distinction in every instance. Sometimes this affection proceeds from some mal-conformation about the heart, or its principal blood vessels; in which case it is accompanied with or preceded by some peculiarity of countenance, discoloration about the lips, difficulty of respiration, and irregularity in the pulse, by frequent syncope or fits of fainting. Not unfrequently convulsions arise without any previous cause or obvious application of any kind that can be assigned, the child having appeared a few minutes before in perfect health; in which case the most sagacious are utterly at a loss to account for them, although the importunity of parents is seldom to be appeased by our acknowledging any degree of igno-



rance of the exciting cause. Convulsions have some small resemblance to epilepsy, and have often been called by that name, though certainly without reason, as they mostly disappear after the second or third year of childhood. They are very liable to be induced in irritable habits at the commencement of small-pox, scarlatina, and measles; but by attending to the usual indications in the early stages of those diseases, we shall frequently succeed in removing the convulsions. The spasms generally come on by paroxysms, which in common language are termed fits; the infant is totally insensible, at least so far as we can judge by the relation of patients at a more advanced age who have recovered from other fits where many similar appearances occur; and this should have due weight, as evidence upon which we may offer some degree of consolation to the unhappy parent, even where our advice or assistance is unavailing. During the continuance of the paroxysm there is often considerable agitation of the extremities, more or less distortion of the countenance, and foaming at the mouth, the eyes being directed upwards, shewing only the white or opaque cornea; the pupil of the eye is mostly a good deal dilated, and the patient appears to be affected internally with convulsive contractions of the stomach and diaphragm, so that hiccough is frequently a concomitant, and a degree of stertor or very

interrupted respiration. The approach of a paroxysm is often denoted by contraction of the fingers and irregular spasms in some of the muscles of the face, together with a slight retraction of the angles of the mouth imitative of smiling, by considerable paleness of countenance, and a darkish tinge of the skin about the inferior eyelids. The period of their continuance is exceedingly various, as well as the extent of the parts affected, from two or three minutes to as many hours, or a day or two with little intermission; then they disappear for a time, and frequently recur. In some instances they will continue with very slight remission for a week; in general however the longer the paroxysms, and the more frequent their return, the greater the certainty of their fatality.

In Mr. Hunter's work upon the Teeth, a general observation occurs, that applies with peculiar force to infantile convulsions: he says, "that local convulsions if not in a vital part, although often very violent, do not kill; and when any part <sup>16</sup> not vital sympathizes, the patient is generally free from danger, a security to the whole being obtained by the sufferings

<sup>16</sup> Perhaps a critical reader, unacquainted with medical phraseology, will object to the enunciation of this passage, vitality in a strict sense attaching to every part of an organized being; but to any one who will be at the pains of investigating the author's meaning, the physiological import of the word will be sufficiently evident.

of a part, which is of little consequence to life.” We see this daily verified in the instance even of universal contractions of the whole exterior muscles of the body in examples of epilepsy, hysteria, &c.; and in children, where the convulsive spasms are confined merely to the flexor muscles of the hands and arms, or to the lower extremities in the milder species of convulsions.

Most nurses who have paid attention to the course of teething in young children are accustomed to connect convulsions and teething as cause and effect, and frequently the event favours such an opinion; but in many instances they are so extremely formidable and so rapid in their termination, that every person unacquainted with the immediate cause of them should instantly apply for medical aid: and neglect from motives of economy or rash confidence is highly criminal.

It has been customary in medicine to refer all involuntary actions in the different parts of the body, where the brain or nerves, or both, are the principal parts affected, to spasm, which is known physically to consist in the preternatural contraction of a part, but the intimate nature or essence of such irregular motion it is not so easy to interpret; no wonder therefore that the application of antispasmodic medicines, from an indeterminate knowledge of the proximate cause of the phenomenon, should occasionally disappoint our expectations.



The common resources in medicine for the relief of convulsions are classed under the head of antispasmodics ; of which the chief that have been employed are asafœtida, myrrh, rue, essential oil of amber, æther, musk, and volatile alkali, or the volatile fœtid spirit. Now it is difficult to determine the superiority of these articles. Practitioners have usually found a mixture of them most efficacious, as æther with volatile spirit of ammonia in doses of ten, twelve, or sixteen drops of each, where the child is not very young, diluted with water, or a mixture consisting of the following ingredients :

R. Vitriolic æther : one drachm.

Rectified oil of amber : five or six drops.

Camphor julep : four ounces.

Of this a desert spoonful may be given every six hours or oftener, according to the violence or duration of the paroxysms. For an infant three or four months old, a very small teaspoonful of the foregoing medicine would suffice. One would conceive that if these medicines did not prove efficacious in curing the disease, by their action on the stomach, and the degree of universal stimulus, they might occasionally disorder the child still more : it is however generally the practice to exhibit some anti-spasmodic, but the warm bath has often superseded, or added greatly to its effect, and the temperature of the water should

be gradually increased according to the necessity of a repetition of the remedy. It is however to be remembered, that ministering to a symptom only, without taking into account the remote cause of convulsions, is not only delusory, but may aggravate the sufferings and danger of the subject; the preceding treatment is therefore more immediately applicable to idiopathic convulsions.

It is evident, that although the foregoing plan may be calculated to relieve or shorten the present paroxysm, it will be highly necessary to keep in view the remote cause of the spasmodic affection, whether it proceeds from the head, or intestinal canal. Sometimes convulsions have originated from a sore, or the local irritation of a wound; this however will very seldom occur. It is found from a variety of experience that the operation of very powerful antispasmodics is extremely uncertain in puerile convulsions; perhaps the mode of administering them by injection is the most favourable, viz. a clyster composed of twelve or fifteen drops of volatile tincture of valerian, and a similar portion of the tincture of asafoetida six ounces, or in half a pint of soap and water, or thin gruel, with a little common salt: this application is calculated to effect a double purpose. Sometimes, indeed, we may observe the fits to subside or entirely disappear, in the same manner as in an epileptic attack,

where no medical remedy is employed ; but it seems inconsistent with our duty in any case of impending danger to let a disease cure itself ; and therefore it is in all cases preferable to attempt some rational method of cure, only taking care that it be not too violent. The warm bath is so valuable an application, so easily procured, and its efficacy often so conspicuous, that the author, from every observation that has occurred to him in practice, is strongly induced to give it a decided preference, without any unnecessary loss of time. The infant should remain in it at least ten minutes, and the heat should not be suffered to fall much below the original standard when it was first immersed ; friction likewise along the course of the spine, with camphorated spirits or saponaceous liniment, after the patient has been wiped dry, is sometimes productive of considerable benefit<sup>17</sup>. Lately, the cold bath has been highly extolled in these cases, and there can be no objection to its use, when other remedies have failed, so desperate and frequently intractable is the nature of the disease.

<sup>17</sup> Some instances have occurred where external stimulants have apparently saved life after the infant had lost the power of swallowing for two or three days.

In some obstinate cases, shaving the head, and bathing it every hour or two with vinegar and cold water, in the proportion of one part of the former to four or five of the latter, has seemed singularly useful. See Dr. Hamilton's Essay on the Management of Infants, Sect. 15.



In the first instance of our being consulted in this formidable spasmodic affection, the stomach and bowels, as being generally known to be very common sources of derangement, should become the earliest objects of attention ; it will be proper therefore to administer two or three grains of calomel to an infant of six or eight months ; where it is twelve, fourteen, or sixteen months old, four or even five grains will often be found necessary. Should the bowels be already relaxed, we may combine the calomel with three or four grains of rhubarb and a grain or two of aromatic powder. Castor oil is an active cathartic and soon operates, on this account it is sometimes preferable ; a teaspoonful and half or two teaspoonfuls will be found an adequate dose for an infant six or eight months old : the operation of these medicines is often accelerated by a common injection, which should not be omitted where they appear too inert. In case of apparent fulness of the vessels of the head, leeches to the temples and forehead will be indispensable ; and even where this fulness of the vessels is not so conspicuous, great advantage will be frequently derived from a perseverance in the use of calomel, which should be repeated at the rate of half a grain, night and morning, for five or six days in succession ; and we cannot impose too much stress on the frequent use of common injections, which not only act as internal fomentations, but are calculated to en-

courage a more vigorous peristaltic motion. In attending to the morbid state of the evacuations from the bowels in convulsions, experience will often fully justify a considerable share of confidence in mercurial cathartics.

With regard to emetics, their indication is sometimes obvious from a foulness of the tongue, pungent heat of the skin, foetid breath, &c. ; and where any great degree of sickness has preceded the attack, the employment of one has frequently removed all further disposition to a return of the fits. The ipecacuanha wine is the most eligible form of administering the emetic where it can be depended upon, in the dose of a teaspoonful to one and a half to an infant of eight or ten months, otherwise three or four grains of the powder ; beyond this period a teaspoonful and half might be ventured on at first, and twenty or thirty drops repeated every quarter of an hour until it produced the desired effect<sup>18</sup>. After the operation of an emetic, a drop or two of laudanum conveyed in the child's food may be necessary to tranquillize it, particularly where we entertain any apprehension of the return of the spasms. Symptoms of great irritation, with a tendency to aci-

<sup>18</sup> Should the infant experience considerable difficulty in swallowing, which not unfrequently occurs in convulsions, we must apply to the back part of the tongue the powder of ipecacuanha ; or two or three grains of vitriolated zinc, which from its solubility in the saliva is more likely to operate with expedition.

dity in the stomach, or diarrhœa, will often ensue upon the going off of the convulsions; in this case it will be expedient to administer occasionally a dose of calcined magnesia from twelve to fifteen grains, with some light aromatic combined with a few grains of rhubarb, and we should avoid giving any acescent food. Should the evacuations be slimy, we may use simple animal broths, or dissolve a small quantity of isinglass in milk, which is a very nutritious and eligible substance.

It may be proper to mention that convulsions have occasionally been excited from employing food of too thick consistence, or from overfeeding children; under these circumstances, if we only comply with a more rational method of treating them, the disease will disappear, or will yield to an active purgative. The very irritable disposition of an infant's stomach gives rise to an infinite variety of symptoms, therefore, as we have before intimated, it is scarcely possible to devote too much attention to the quality, as well as quantity, of their food. Should the convulsions arise from the progress of teething, it is hardly necessary to anticipate the treatment here, as it will be particularly considered in a future chapter<sup>19</sup>. Where they accom-

<sup>19</sup> Where the convulsions accompany the whooping cough, (in which case they are often truly formidable), great benefit has been said to be derived from the tincture of hyoscyamus, in the dose of sixteen or twenty drops evening and



pany the irritation from worms, they are more remarkable at a later age, and are far less fatal, provided we discover the cause early enough to exhibit proper vermifuge medicines; to which end two or three doses of calomel, with four or five grains of scammony or jalap, should be exhibited at short intervals, and a strong infusion of rue with coarse sugar, and a dram of tincture of senna, employed as an injection: to be repeated according to the exigency of the case.

It is of importance to observe, where medicine has had comparatively but very trivial effect, that change of air has been frequently known to insure the infant's safety after repeated attacks of this complaint.

From the universal insensibility mostly attendant on this disease, laudanum, although a powerful antispasmodic, in general, is strongly contra-indicated, and appears to have very little power in subduing the convulsions; it is therefore to be resorted to with great caution and delicacy, except in a state of extreme restlessness or irritability, where we are obliged to employ some sedative. Musk has been sometimes found instrumental in shortening or preventing a recurrence of the paroxysms; about a grain will suffice for an infant of eight or morning to infants within six months of age. See Hamilton's Essays, Sect. 15.

ten months, and two grains to a child a year and half old might be administered, rubbed up with sugar and a tablespoonful of camphor julep, or mint water, every five or six hours. The quantity of this medicine may be increased if necessary without any danger; and Dr. Underwood, who affirms that he has had considerable opportunities of witnessing its efficacy, is disposed to rank it very high in the class of antispasmodics<sup>20</sup>. The remaining application, which has had numerous adherents, is that of blisters, and is one of the most popular remedies in use; however, during the course of my own practice, and from observations in the practice of others, I feel less zealous in defending them, than several of the other modes of relief already pointed out.

I consider blisters chiefly inadmissible on the ground of their seldom failing to add a new irritation to the stimulus already existing, whereby the mischief is often considerably increased, or the paroxysm manifestly prolonged in constitutions where predisposition to spasmodic contractions is often particularly obvious<sup>21</sup>. The

<sup>20</sup> Candour obliges me to confess, that my own experience of the virtues of this article would not lead me to place much reliance upon it in the cure of infantile convulsions.

<sup>21</sup> Although the same principle which here forms the ground of objection to blisters in universal diseases, constitutes a very ostensible motive for their recommendation in topical affections in the practice of surgery.

principal circumstance that appears to indicate the use of a blister is a comatose state of the infant, which will occasionally succeed a long continued paroxysm; a blister applied between the shoulders will then afford relief in some instances. I have not depreciated this application from any theoretical prejudice, but from having repeatedly witnessed more harm than benefit from it; and in several cases, after withdrawing the blister, have noticed the convulsions to terminate for a considerable interval of time.

Should the infant fall a sacrifice to the convulsions, for the benefit of science, and the consolation of parents, no opportunity should be lost of tracing the morbid cause of this affection by anatomical examination; for a single discovery of the true source of this disease would amply compensate the pains of investigation. The little satisfaction that is occasionally derived from this species of inquiry ought by no means to discourage further research, since it is capable of affording the only glimpse of real information that can be attained. This is by far the most fatal accident occurring in infancy under two years of age; the prevention of which is often more within the reach of art than the cure, although no doubt this is frequently attainable.

Where change of air cannot be procured, it



is incumbent on us to insist on greater regularity in food, cleanliness, and a liberal share of exercise. Since we are perfectly well assured that the disease may proceed from affections of the mind in the parent or nurse, all violent impressions should be guarded against, and dissipation of every kind scrupulously avoided during the office of suckling; and this idea cannot be too deeply considered, particularly as it leads to numerous examples which might be adduced in proof that many of those calamities which it is customary to attribute to the natural constitution of the human species are by no means involved in it, but too frequently result from our own caprice, and the abuse of natural reason.

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## CHAP. VII.

*On the Indisposition arising frequently from a Change of Food consequent to Weaning, termed Atrophia Ablactantium.*

NO period of infancy can be regarded in a more critical light than that which constitutes the immediate subject of this inquiry. The animal economy appears to require some deviation from the former diet of infancy, but artificial

refinements and hypothetical notions of strengthening articles lead to the use of a variety of aliments equally repugnant to the powers of the infant's frame, and to the simple dictates of reason and propriety. The transition from milk, a food of the easiest digestion, to animal food, gravy, and vinous liquors, including under this head strong beer, cannot fail to produce disorders in the stomach and bowels; it is seldom therefore that an infant thus treated escapes with impunity, for the general consequences are, a state of feverishness, frequent flushings of the face, restlessness, the utmost irregularity in the alimentary canal, and a state of the system more bordering on apparent inanition than actual support. Amongst other frequent consequences of this absurd plan of treatment are to be observed numerous unpleasant eruptions on the skin, particularly in various parts of the face; at other times the eruption affects the scalp or the integuments behind the ears, and the lymphatic glands about the neck, which in a variety of instances are liable to assume the scrophulous action. It is the common practice to feed children in many parts of the north of Europe, and even amongst the majority of the population of Ireland and Scotland, upon vegetable food and milk, or whey, to the exclusion of any preparation of animal food. When we observe the evident manifestations of health and strength of children



supported on vegetable food even in severer climates, it would appear that we who resort to the various articles of animal food, under an idea of imparting superior strength, are wilfully shutting our eyes upon palpable facts, and pursuing the light of nature in a retrograde course. It may be questioned upon the whole, whether it is ever advisable to administer animal food alone to a child under two years of age, unless as medicine, or in particular cases of debility, either natural or acquired by lingering illness.

I believe that the general practice in this country of employing animal food in the early management of children among the better classes of society has been too much sanctioned by medical men, and to a greater extent probably since the specious theory of Dr. Brown has been applied both to diet and medicine.

In consulting the bills of mortality in the metropolis, or in any large manufacturing town, we find that most infants are carried off about the period of life now under contemplation. It is equally notorious that custom has induced mankind to impute this calamity to the circumstance of teething, many children being evidently afflicted by this cause to a considerable degree; but it is extremely frivolous to shelter ourselves under this notion so indiscriminately. A very little observation would convince us, that the evolution of the teeth is not unfrequently pro-



tracted by a vitiated state of the alimentary canal, and that few children go through the process so regularly and with so little indisposition as those who are supported but sparingly on animal food. This remark is not brought forward as a point of theory, but has long been under the author's review, has been put to the test of many years' experience, and is now presented from the fullest conviction that proper regimen at this period affords a prospect of the highest advantage. The acknowledged fact of the intimate connection between the functions of the stomach and the phenomena of teething, should naturally incline us to avoid every kind of abuse in the article of diet; indeed the simple practice of feeding children, so recently exemplified on a large scale, not only in other northern countries, but even amongst the less opulent and poorer classes of our own (many of them here principally subsisting on bread and milk, or bread with a scanty supply of butter), should serve to remove the scruples of those prejudiced and falsely indulgent parents, who are prone to adopt a contrary system.

The most common indications of derangement in the digestive organs of infants from the free use of animal food are, increase of sensible heat, fur upon the tongue, dry brownish parched lips, with an acidity or unpleasant foetor in the

breath, heaviness about the eyes, fretfulness, and frequent fits of screaming; flatulence with costiveness, and ill-conditioned excretions from the bowels, and want of regular sleep. There are endless gradations of these symptoms, and sometimes they are so slight at first as scarcely to attract the attention of the parent, particularly where she has not been much accustomed to the management of infants. On some occasions the stomach will not appear to suffer in so material a degree as the bowels; but this is very uncertain, the stomach in some instances being so extremely irritable as to retain nothing for more than five or ten minutes; or the general indisposition is so pressing as to occasion but little change to be exerted on the food employed, the residue of which, for a considerable period, is accompanied with vitiated secretions from the bowels; it therefore becomes necessary in all cases of indisposition at this period to examine the evacuations frequently: there is no sign of disease so truly unequivocal. If the *fæces* emit any acid effluvia, (one of the earliest proofs of indigestion) are slimy, pale, or particularly offensive, with a putrescent fœtor; above all, if there are any appearances of merely disintegrated animal food, we may rest assured, that by persisting to exhibit the slightest proportion of such food, we shall constantly aggravate the child's indisposition; an increased de-

gree of feverishness will ensue, and the infant will ultimately fall a victim to our indiscretion.

Experience points out two stages, or varieties of indisposition, that will require a difference of treatment, both medical and dietetic, which I shall attempt to describe with fidelity, and with as much simplicity as possible; indeed, I should conceive that the examples of each will be easily recognized by the intelligent observer. A very common mark of indisposition at this period is a tumefied state of the abdomen, with a degree of hardness, amounting almost to tympanites, or, as nurses term it, the wind-dropsy; with this symptom it is not unusual to observe great emaciation of the extremities, a pale contracted countenance, with hollowness of the eyes, and a very inanimate look, except when the child is unusually flushed, or under the influence of febrile irritation. The infant often sleeps very imperfectly, and discovers in the progress of this general irritation a propensity to be picking some part of its face, and if it has any eruption about the mouth or alæ of the nose, no unusual concomitant, the child will often disfigure itself in no small degree. The appetite for food is frequently voracious, at other times very uncertain and capricious; the former is more remarkable in an advanced stage of the infant's indisposition; still, whatever article of food is administered, it conveys but a temporary gratification,



or it induces sickness, and soon gives rise to a fresh accession of heat, thirst, and irritation, and to universal derangement of the system.

There is a further stage, or variety of indisposition about this period, more alarming, and frequently terminating fatally, where there is not only emaciation, but the skin universally covering the body, especially about the groins and lower extremities, is drawn into folds : this state of general emaciation even gives a peculiar withered aspect to the countenance, which is completely wrinkled, and the skin is totally void of its usual elasticity. There are profuse hectic sweats, extreme paleness of every part from a scanty supply of red blood in the capillary vessels, voracious appetite, but a perpetual state of diarrhœa ; in some children we observe a constant degree of fretfulness and irritation, until at length nature sinks from exhaustion. Occasionally, between the feverish paroxysms, which are ushered in by preternatural heat, and partial flushings of the face, and great velocity of the pulse, the infant is more or less lethargic, but a state of vigilance and perturbation is more common. Many of the last recited symptoms will frequently attach to those infants who have been confined to the breast for a year and half ; or longer, at a period when the parent's milk is divested of almost every nutritive quality, or the secretion is so scanty that the infant is never satisfied even though continually

applied to the breast : there is, however, a considerable difference in the result of these cases, where the child is afterwards properly nursed or attended to<sup>22</sup>. This state of the constitution has obtained in medical language the denomination of Marasmus, a term merely descriptive of inanition and universal emaciation. The best, and almost the only article both as food and medicine, where an infant has been thus reduced, is an allowance of animal broth, either from beef or mutton, with a certain proportion of stale bread, or tops and bottoms; or biscuit powder made into a proper consistence, with beef tea, may be commenced with, in cases where the infant's stomach is unusually irritable.

With regard to the treatment of the first stage of indisposition that has been pointed out, having resolved upon abstaining from the use of animal food, in order to give the infant the best and speediest chance of recovery, we must enter upon a mercurial course with some degree of delicacy; and calomel that has been repeatedly washed with lime water or volatile-alkali, so as to free it from every particle of muriatic acid, is the most eligible medicine we can employ. One grain and a half, or two grains, should be administered every alter-

<sup>22</sup> Observation has taught me, that the dietetic regimen constitutes the most important object of attention, but more especially in the first case or early stage, where it is almost the only mode on which dependance can be placed.

nate morning for a week or ten days, so as to produce three or four purgative motions each time. During the exhibition of the mercurial our attention must be directed to the state of the digestive powers, and different preparations of vegetable food, as arrow root, rice powder, tapioca, or biscuit powder, should be given alternately in small quantity at frequent intervals, and sometimes with a portion of milk. While we are pursuing the mercurial regimen, it will most probably be necessary to interpose some light aromatic and bitter medicine, with a small proportion of magnesia, or mild vegetable alkali<sup>23</sup>.

The salutary effects however of any tonic medicine at this crisis are far inferior to those of calomel, which does not operate by its purgative virtue simply, but is chiefly found to in-

<sup>23</sup> The following formulæ or prescriptions of a simple tonic may either of them suffice :

R. Tincture of colombo, a drachm and half.  
       Tincture of quassia,  
       Tincture of lavender, of each one drachm.  
       Syrup of orange-peel, two drachms.  
       Simple water, two ounces.

Or—R. Ærated kali, fifteen grains—to one scruple.  
       Spirits of cinnamon, a drachm and half.  
       Tincture of colombo, two drachms.  
       Water, two ounces.

In case of nausea or continued irritability of the stomach, a drop of laudanum may be occasionally added to a table-spoonful of either of the foregoing mixtures.



fluence the various secretions of the digestive organs; the action of which has long been deranged by the absurd and erroneous course of diet pursued. It is difficult to advise any limited measure of the mercurial as to the duration of its exhibition, which must solely depend on a variety of circumstances that will be expected to come under the discrimination of the professional attendant. Should the infant experience any considerable degree of debility from perseverance in the mercurial, (although there can be very little doubt of its ultimate benefit), it may be advisable to give more frequently small quantities of sago, or panada with a little port wine, but vinous liquors are upon the whole contra-indicated. There is but little chance of inducing salivation by employing a purgative dose of calomel; and with regard to any secret pernicious effects of this or any other mercurial preparation on the infant's constitution, such opinions can only originate or find support among the weak and credulous. Should the child after the first week of the exhibition of the mercurial become more regular in its bowels, and the evacuations assume a more natural and healthy aspect, whilst the tone or function of the stomach is at the same time improving, we may reduce the quantity of calomel, continuing to employ it in the dose of half a grain every other night for a week or ten days longer, observing to purge it off, if neces-

sary, with a dose of rhubarb and magnesia, or castor oil, that it may not affect the mouth or gums. Chalybeate or steel medicines, and preparations of bark, have often been resorted to after cleansing the bowels, but these are by no means entitled to recommendation in this disorder; the former are too stimulating, and the latter article frequently acts disadvantageously on the intestines, so that neither of them can be said to strengthen; whereas the lighter tonics, particularly an infusion of the *Angustura* or *cascarilla*, bark, are far better adapted to the state of indisposition in view.

In the case of tumid abdomen, accompanied with dry parching heat of the skin, and a constipation of the bowels, in addition to the foregoing medical treatment, the hot bath should be employed twice or thrice a week, beginning with the temperature of 80° or 85°, and rising gradually at each repetition, to 95, or 100°; it either imparts an agreeable stimulus to the constitution, or induces a universal and equal degree of relaxation of the surface.

In order to meet the other extreme of indisposition, viz. extraordinary emaciation, hectic fever, great keenness of appetite, and perpetual

<sup>24</sup> In the proportion of two scruples, or a drachm to eight ounces of boiling water, a tablespoonful of the cold infusion for a dose.

diarrhœa, it is often difficult to succeed where the opportunity for advice has been long delayed ; the irritable state of the system, especially of the stomach and bowels, being frequently such as to baffle the most judicious treatment. The same medicine which was calculated to produce so much relief in the former case seems here to present several inconveniences; indeed, calomel in any form at first seems contraindicated on account of its tendency to increase the thin watery secretions of the mucous glands of the intestines. We are therefore to palliate the present symptoms, and after administering a dose or two of rhubarb and calcined magnesia, so as freely to empty the bowels, we may give a pap spoonful of the chalk julep, with a single drop of laudanum, or half a tea-spoonful of syrup of white poppies, two or three times a day as a slight cordial, and to allay irritation; or administer a simple starch injection. The child's final recovery, however, cannot be accomplished without gradual recourse to mercurials, notwithstanding its hectic disposition and evident debility. Whilst there is a total suspension of the biliary secretion we can trust to no substitute, and the restitution of the healthy function of the liver is indispensable.

The gentlest form of exhibiting mercury on this occasion is to employ a solution of the *pilula hydrargyri*, or quicksilver pill of the London Dispensatory, in mint water; three grains will be an adequate dose for an infant of fourteen



months, or about eight or ten grains of the hydragyrus cum creta, which may be administered in jam or honey every other night, until some favourable change is effected both in the appearance and odour of the excretions, subject however to the same restrictions and attention as were pointed out in the former case. The mercurial is frequently found to have a more salutary effect, and may be employed with greater security if we desist from it for an interval of a week or ten days, and then renew the dose according to circumstances; this likewise happens in other instances of exhibiting active medicines. Should it re-produce or increase the diarrhœa, it will be expedient to combine with it a grain of the compound powder of ipecacuanha, or half a drop of laudanum, so as not to counteract the specific action of the mercurial on the digestive organs.

During the progress of the foregoing treatment, relief has been occasionally experienced from the application of a full-sized plaister on the abdomen, so as to keep up some degree of exterior stimulus, consisting of equal parts :

Compound laudanum plaister, and

Compound litharge plaister—with one-fourth of

Blister plaister, and a few drops of oil of mint.

In the event of the evacuations being more impregnated with bile, to obviate debility, and to improve the digestive powers of the stomach, we may give the following medicine once in six or eight hours.

R. Carbonated precipitate of iron, three to five grains.

Powder of colombo, five grains,

Aromatic powder, two grains.

This medicine, after proper trituration, may be administered to the child as a single dose in any aqueous fluid. The diet should consist principally of farinaceous matter, such as arrow-root, rice-gruel, or panada, with sometimes a small quantity of port wine; it will frequently, however, be necessary to exhibit once or twice a day a little animal broth, but it should be given in the absence of feverish symptoms.

In conjunction with the preceding mode of treatment, change of air, which will sometimes supersede the best medical interposition at this period of life, may be mentioned. The place should be situated in a pure, dry atmosphere, and not too much exposed to easterly or other cold winds, and free from any moisture or marshy exhalation. It is not easy to appreciate the benefit to be derived from change of air too highly throughout the whole term of infancy, and it can hardly fail of accelerating the other means of cure already pointed out as applicable to this disease. A frequent change of clean linen will also be beneficial throughout the cure; the degree of relaxation often conspicuous in these cases may seem to thwart such a proposal, and will sometimes inspire ignorant people with a

dread of exposing the infant to the chances of catching cold, but the comfort which it promises, and ample experience of its salutary effects, ought to set aside any frivolous prejudice.

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## CHAP. VIII.

### *On the diseased State of the System during the Progress of Teething.*

WE find an exemption from pain and sickness during the term of dentition in almost every class of animal except the human subject; indeed, a great number are born with perfect teeth, according to the kind of food each particular creature is destined to subsist upon, whether herbivorous or carnivorous. This agrees with the general economy of nature in the comparative creation, almost every animal being intended to complete its growth in a more rapid degree than the human species; but this leads one to reflect, that as the more uncultivated part of mankind approaches to the nature of animals, in experiencing little or no danger at this period, that even the process of teething is not to be wholly contemplated in



the light of a natural evil. The very irritable state of the system, which has been described as peculiar to infancy, and confirmed or extended by a variety of artificial refinements, continues usually until the child attains its third year; and from the end of the sixth to the eighteenth or twentieth month, the teeth are gradually making their way through the sockets, and afterwards penetrate the gums, when inflammation is excited, and we are led to notice considerable sympathy with the alimentary canal, and frequently with the head, and many of the symptoms arise that already have been enumerated under the subject of convulsions, and derangement of the alimentary canal.

The teeth, considered anatomically, are parts of very elaborate structure, and of peculiar, or rather eccentric formation. Their earliest rudiments are detected in the embryo of the human subject at the third or fourth month, appearing as soft vascular pulps. About the fifth month in examining the jaw attentively, we discover ossification commencing about the edges of the first incisors, and especially in the lower jaw<sup>25</sup>. The pulps which are to

<sup>25</sup> Besides these, we sometimes find distinct points of ossification corresponding with the four protuberant molares or grinders, of which the external parts come first into view. The edges of the ossified parts appear rather horny than bony, and have been compared to the mouth or edge of the shell of a snail when it is growing, and this part of a tooth

form the future teeth are now enveloped by a soft, highly vascular membrane, which is destined to form the enamel, constituting afterwards the periosteum common to the gums and part of the teeth. There is but little appearance of sockets, these being developed as the teeth advance in growth, and the order in which they succeed each other is generally very methodical and exact. The mode in which the bony part of the tooth is formed does not admit of a very simple elucidation, but Mr. Hunter has shewn by an experiment of feeding a very young animal on madder, where the coloured fluid would pass without interruption into the minutest vessels, that the bone of a tooth is formed of lamellæ, placed one within another; the outer of the lamellæ is the first formed, and is the shortest, the more internal lamellæ lengthen gradually towards the fang, by which means, in proportion as the tooth elongates, its cavity grows smaller and its sides thicker: but how the earthy and animal substance are deposited on the surface of the pulp, this anatomist observes, is not perhaps to be explained.

The bone of a tooth differs but little in substance, or its more obvious qualities, from that of other parts of the system; but the enamel is very  
would seem to grow much in the same manner, and to have nearly a similar connection with the pulp as a snail has with its shell.



differently arranged, has a more vitreous structure, and possesses little or no animal matter<sup>26</sup>; the sharpest saw will hardly penetrate it, although the file of the dentist is occasionally required; when broken it appears striated, and the individual fibres are disposed in arches, which Mr. Hunter conceived would prevent the tooth from wearing down so soon, as the ends of the fibres are always acting on the food: and near the gums there is a difference in the arrangement, the fibres here inclining towards the bony part of the tooth. The enamel is fortunately thickest on those parts most employed in mastication, and gradually diminishes in depth as it approaches the gums, where it terminates. Although excessively hard, this substance will not resist the action of mineral acids, which, when concentrated, reduce it to a pulpy state, and even the vegetable acids exert considerable influence on it, such as cream of tartar, on which account they are very ineligible as dentifrices.

I have already stated, that the teeth are surrounded whilst they are confined to the individual cells which contain them in the alveolar process, or socket of the jaw, by a thin vascular capsule from their earliest formation, till the time of their full evolution from the gums, which has been called

<sup>26</sup> The difference in the chemical analysis of the enamel and bony structure, (if we except the larger proportion of animal gluten in the latter,) is not near so great as an experimentalist would anticipate *à priori*.



their external periosteum, though it has no connection by adhesion, and originally performed the office of secreting the enamel ; it loosely embraces the tooth, and when inflammation attacks the gums, this membrane is probably thickened in the first instance, and is always more or less implicated in the resistance opposed to the cutting surface of the tooth. With respect to the progress of growth in a single tooth, the upper surface, or crown<sup>27</sup>, is formed first, then the neck, or middle somewhat contracted space between the crown and the fang, and last of all, the fang itself. This peculiarity of formation would scarcely strike a person unacquainted with anatomy, though when we reflect a little, it is with a very obvious intention, but it constantly obtains. As there is no alveolar process<sup>28</sup> at the earliest period of infancy, (this part being evolved in proportion to the growth of the teeth, and the substance of the jaw being merely hollowed out into cells) we find from the short space between the upper and lower jaws the same characteristic feature to obtain in the lower part of the face in infancy and old age.

By the time the foetus has completed its growth, or coeval with birth at the ordinary period, the rudiments of the teeth are protected within complete bony cells ; each capsule from

<sup>27</sup> A term better applied to the molares, or grinding teeth.

<sup>28</sup> The spongy and bony appendage to the jaw, containing the fangs of the teeth.

whence the exterior organization proceeds is separate, and the upper part is a little contracted towards the gum, to obviate, as has been thought, any great degree of compression in the future action of the jaws that might injure the delicate structure of the inclosed pulps.

It is impossible to do justice to so interesting a topic as the anatomy of the teeth in a work of this kind; it can only exhibit a very faint sketch of this delicate and unique process of osteogeny, which, however, seemed to require some degree of anatomical illustration prior to the consideration of the order and symptoms of dentition: but to understand the matter with greater precision, the plates of Mr. Hunter, or the late work of Mr. Fox, are indispensably requisite, and even these will furnish a poor substitute for anatomical investigation.

The general number of the first set of teeth varies from sixteen to twenty, which are called temporary or milk teeth; in fact, they are adequate for all the purposes of the animal economy till the age of ten or twelve, when they are gradually supplanted by a fresh series, issuing from newly formed cells, or sockets in the jaw, and by a few supplementary teeth. About the eighth month, sometimes not before the tenth after birth, the incisors<sup>29</sup> of the lower jaw make

<sup>29</sup> These are sometimes known by the title of smiling teeth, as being most conspicuous in that action.



their appearance, and within three or four months afterwards, varying in different subjects, according to the strength of the child, the two antagonists in the upper jaw are found to succeed. It is seldom that the lateral incisors of the inferior jaw present themselves before those of the upper, but occasionally they do, and without apparent inconvenience. Next to the incisors, the first double tooth, or bicuspes (so called by Mr. Hunter), presents itself, but neither the grinders nor the canine, or cuspidati<sup>30</sup>, are formed so fast as the incisors ; indeed, in the foetus the cuspidati project from the circle of the jaw for want of room to admit them, and the first molaris or grinder is often more advanced latterly within the alveolar process of the jaw than the first cuspidatus, and most commonly takes the lead of it.

These obvious circumstances with regard to the natural progress of the teeth indicate the proper period for weaning children, and there is little doubt that the future process of dentition is frequently retarded by persisting to suckle them longer, and that the milk afterwards predisposes them to indisposition, which is imputed by way of subterfuge or prejudice to the act of dentition itself. Perhaps one exception might be stated in favour of children who are weakly, or where the greater fontanel remains open much beyond the usual time ; the teeth usually appear-

<sup>30</sup> So called from comparing them with the long penetrating teeth of carnivorous animals.



ing later, it may be questioned how far absolute weaning ought to be recommended at the tenth month? In the above instance, it would appear that the infant should not be totally weaned if the mother is healthy, and has much milk, but it should be gradually inured to other nutriment, such as weak beef tea, made into a gelatinous consistence with biscuit powder, or a small quantity of arrow-root.

In some families it is not unusual to observe children cut their teeth without any difficulty or illness, even in the most civilized classes; and on the contrary, the young of other parents universally indisposed at this period: but this is not so general as to allow of our grounding any argument upon it as the effect of hereditary temperament, since so many casualties are liable to intervene. Pure country air, and attention to their food and natural habits, appear very instrumental in diminishing the sufferings of children at this crisis.

Although in infants that are strong and healthy the foregoing order obtains in the process of teething, yet we often find in weakly subjects that this operation is slow, irregular, and uncertain. In this case the nurse observes that the child cuts its teeth cross, *i. e.* three or four teeth will present in the upper, and none in the under jaw, or the reverse. Sometimes a considerable space will intervene between each succeeding

tooth, or one or two bicuspedes<sup>31</sup> may appear before either of the lateral incisors; where this irregularity occurs, it is mostly accompanied with some degree of pain or irritation. It will frequently be remarked, that the difficulty attendant upon dentition is more experienced during the appearance of the cuspidati, or canine teeth, and the first and second grinder, than during any of the others; but no general observation can be advanced that will not admit of some exceptions. It is considered, however, in general, that if the first teeth (especially where they originate in the under jaw) are cut with facility, we may prognosticate that the succeeding will give but little trouble, although this is liable to uncertainty; indeed, scarcely any two children agree in every particular at this crisis, which on this account is a truly eventful and suspicious period of life, although happily for both the parent and child, additional care and solicitude give birth to increasing reciprocal tenderness and affection.

Having briefly explained so much of the natural history of the teeth as to enable the general reader to comprehend some of the phenomena of their growth, though it has been found impossible to introduce this subject without the occasional use of anatomical or technical terms, the

<sup>31</sup> Teeth distinguished by two cutting points, instead of four, as in the *moralis* or grinders.



author is now induced to consider how far the process of cutting them is connected with subsequent indisposition, some writers of respectability on the continent having denied the teeth even any share in these complaints, and finally to point out the most appropriate treatment of this important æra of childhood.

On examination, we find the gums affected with heat, tumefaction, vulgarly termed spreading of the gums, and considerable redness, but without that exquisite tenderness peculiar to most other inflammations, which is ascertained by the touch, as well as by the instinctive propensity on the part of the infant to employ some degree of friction with any hard substance which it can apply; coral is frequently made use of for this purpose, which is too harsh, though probably given for its attractive colour. Liquorice root, or any other innocent vegetable or yielding substance, is much preferable.

Before we describe the simple operation of lancing the gums, it will be necessary to advert to a single anatomical point before noticed, from its connection with the structure of the teeth<sup>32</sup>. When the tooth cuts the gum, the membrane which completely surrounded it in the alveolar process of

<sup>32</sup> It might perhaps be expected, in the strict order of the subject, that I should have previously stated some of the urgent reasons for performing this operation; but the symptoms of indisposition immediately requiring it will be found in the succeeding chapter.



the jaw is now perforated and subsequently wastes, or is absorbed without any ulceration following, and is so far removed when the tooth has fully emerged, as merely to adhere to a part of the neck and fang. Previous to the penetration of the incumbent parts of the gum, the teeth act for the time as extraneous bodies, but their natural protrusion is not to be regarded simply in a mechanical light; for whilst their growth is proceeding, another operation is at the same time going on, viz. a decay of that portion of the gum and alveolar process that invested the upper surface of the tooth, and whilst perforating the gum, the stimulus arising from the distension of the gum and vascular capsule creates all the disturbance of the system commonly noticed at this period: it is the irregularity of these symptoms that frequently constitutes the danger. In many cases it is true that the effects are merely local; so it is frequently with a sore throat, where a highly irritable part is inflamed, but where the constitution sometimes barely sympathizes at all with the affected parts: at other times we find the reverse, and indeed in this respect there is the utmost variety<sup>33</sup>.

<sup>33</sup> Throughout the early term of infancy there is considerable analogy between the human subject and other animals in most of their animal functions, and this is capable of being traced still more closely in uncivilized life, where we often observe far less tendency to disease during this natural process; but this approximation becomes less distinct as we

The operation of lancing the gums may be performed at all times, where the process of teething is conducted tardily, or wherein they prove a source of irritation, with perfect impunity, and with a fair prospect of ultimate benefit. The most effectual mode of performing it appears to consist in making two small semilunar incisions on each side of the cutting edge of the tooth, thereby fairly removing a portion of the gum, so as to obviate the future adhesion of the divided surfaces. In the operation for facilitating the passage of the double teeth, the best mode is to effect it by a free crucial incision. Whenever the necessity of it is seriously alluded to, at least in the majority of cases, parents receive the proposal with extreme reluctance, conceiving that it is attended with danger, or extraordinary pain to the child; this however is an ill-founded opinion, that is thoroughly evinced by the conduct of the infant during its performance, which, so far from expressing any signs of acute pain, appears to be instantly relieved by the operation. We may always be guided by the appearances of the gums respecting the precise time when the operation should be resorted to, for as the tooth emerges from the socket, the investing parts being removed naturally by absorption, at last

review the perversion of manners and customs of the different classes of society in a large city, proving a source of incalculable evils.

become comparatively so thin as partly to expose the tooth, or the general swelling of the gum projects so far from the level of other teeth, as to leave no doubt of the true situation of the recent tooth.

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## CHAP. IX.

### *The Subject of Dentition continued.*

DURING the whole period of dentition it is almost unnecessary to observe, that there is considerable fretfulness, the face is exceedingly flushed from the increased determination of blood to the head, and there is a copious flow of saliva, together with frequent appearances of a small vesicular, sometimes herpetic or confluent eruption about the face, or behind the ears; it frequently shews itself also in other parts of the body. The temperature of the skin is much increased, and there is extreme restlessness; the pulse is considerably accelerated, amounting to 130, or more, in a minute, the tongue is covered with a white fur, and every mark of acidity prevails in the excretions from



the alimentary canal. The action of the bowels at this period is exceedingly various, the different secretions voided with the fæces assuming a totally different appearance, as has been anticipated, from what we remark in health. Sometimes the evacuations are quite green and thin, at other times they put on the common bilious appearance, but accompanied with a viscid slimy matter; occasionally they are of a slate colour. The different phenomena with regard to this excretion, however disgusting to a delicate reader, and often repeated in the course of the present work, constitute a part of sufficient interest (more particularly perhaps at this interval) to excite and merit the greatest attention. It is not unusual for diarrhœa to prevail during nearly the whole of this period in a greater or less degree, and the management of it requires more than ordinary judgment; but as it generally constitutes a natural cure for many of the inflammatory symptoms, it should never be counteracted by powerful astringents.

From the extreme irritability of infants, teething gives rise to an infinite variety of symptoms. Nothing is more common than affection of the mucous membrane of the lungs, accompanied with cough and considerable tightness of the breath, which may be so acute as to mislead the practitioner as to the remote cause.

The nervous system is particularly exposed to irritation, hence infants are much troubled with startings and very imperfect sleep, and even with spasmodic symptoms, and convulsions. Sometimes the determination of fluids to the head is so very great as to occasion symptoms of hydrocephalus, or water within the brain. These appearances are sufficiently alarming to put a parent on her guard, and to prompt her to seek for medical aid ; but there is an idea too prevalent throughout the whole term of infancy, that such a mystery attaches to all the diseases of children, that it is preferable to leave them to the mercy of nature than to torment them with medicine ; which often furnishes a specious pretext for neglect, though if that obscurity did actually happen, it becomes an additional reason for having recourse to medical assistance. This opinion however of the mysterious nature of infantile disorders is so far from being true, that any intelligent professional observer who is accustomed to watch their progress, can apply remedies in general with an equally determined effect as at any subsequent period of life ; but it is to be remembered, that to obtain the full advantage of art, the complaints of infants, as well as many of those of adults, should claim our instant attention. Now, whatever symptoms may arise in childhood about the time of teething gradually give way in most cases



as the teeth advance, and therefore no substitute will avail if we neglect lancing the gums under these circumstances. Practitioners not uncommonly administer saline or nervous medicines, with a view of palliating the present indisposition. Some will even advise blisters, than which it is difficult to propose any thing worse, as they too often increase the mischief and add to the irritation; nor should any other stimulus be employed to inflame the skin of infants in these cases, except indeed hydrocephalus, or internal inflammation.

Hydrocephalus, or dropsy of the brain, though perhaps deserving a separate consideration, yet as being occasionally one of the effects of teething, and as it falls here under the author's view in that light, is too important a subject to overlook. From the almost universal fatality of this disease, where it occurs from the seventh to the tenth year, or at the time of puberty, there is reason to believe that in occasional instances of recovery at the period now under contemplation, water has not been effused, or but in a slight degree, notwithstanding the existence of many well marked symptoms.

Authors who have treated of this disease, and attended to it minutely<sup>34</sup>, have divided it into three stages, which it is unnecessary

<sup>34</sup> Hydrocephalus does not appear to have been noticed by any European writer before the middle of the eighteenth



to detail here; we have only to remark, however, that where we fail to relieve the precursory acute symptoms, we shall seldom succeed in curing the disorder; yet fortunately, it is a very rare consequence of dentition, although it terminates often fatally, in consequence of the slow and insidious manner of its attack, the mischief of the actual effusion of water having occurred before any suspicion has been excited of its real existence.

The leading symptoms of hydrocephalus are, a great degree of stupor, approaching to insensibility, with a very unmeaning countenance, and in many a propensity to squint in a kind of languid condition between sleeping and waking; there is a circumscribed flush of the cheeks, alternating with a ghastly paleness, frequently a short cough, tremors of the extremities, an intolerable degree of weight and heaviness about the head, the infant being unable to support it without reclining against the nurse, and even then discovering a strong propensity to return to the horizontal posture, or to throw its head back with violence. Early in this disease it is not unusual to remark considerable pain about some part of the head in children who are able to point out their feelings; nausea and  
century, nor to have been known as a distinct disease till it was described by the late Dr. Whytt of Edinburgh.

retching frequently prevail, the head appearing to be instantly relieved as the stomach becomes affected. Some children have originally very large heads where this disease manifests itself, but it may arise independent of this circumstance at the period in question. As the complaint advances there are exacerbations, or severer paroxysms of fever, with restlessness and apparent delirium towards night: in this stage there is manifestly an increase of general irritation; the child screams, is averse to the light, sleeps but little, and is in perpetual action with its hands. The pulse, though frequent at first, soon becomes slower, more languid, and somewhat intermittent; the breathing also in this stage is not so much interrupted. In the progress of the disease the pupils of the eyes are unusually dilated, though not universally for several days, there is a manifest squint on one side, and we frequently note an increased vascularity of this organ. The heat of the skin is very irregular and partial, the hands sometimes parching with heat, and the lower extremities cold, and there is often a partial paralysis on one side; the intestines are mostly constipated, and towards the decline of the disease other marks of torpor prevail in the system. Very little urine is secreted, and that passed involuntarily; it is the same with the fæces: but these



symptoms are not very obvious in a state of infancy. In some cases the sympathy of the stomach with the affection of the head is so constant, that it is difficult to administer any thing by the mouth effectually. As the disorder becomes better defined, it is more easily characterized by the constant propensity to sleep, no object being sufficiently engaging to excite the most fleeting attention; and by convulsive spasms frequently affecting the face, especially the mouth, and often the upper extremities. Very frequently the disease is highly acute from the beginning, indicating strong action in the vessels of the brain, and terminating fatally in six or eight days; but it mostly lingers to a longer term, occupying even three weeks or a month, and at last terminating fatally: no two cases are precisely similar, and it is to be regretted that the diagnosis is often obscure in childhood. The prognosis in these melancholy cases is in general very hopeless; but no practitioner should hesitate in employing the most active means, as soon as any well marked symptom of the disease can be fairly ascertained. Immediate recourse should be had to bleeding, either from the temporal artery, or by cupping-glasses applied between the shoulders; where these are objected to, four or five brisk leeches should be applied to the forehead and temples, and the bleeding



should be encouraged for an hour or two afterwards by warm fomentations. Four or five grains of calomel should be now exhibited, and no time should be lost in applying a blister of considerable size to the nape of the neck, which should be dressed in twenty-four hours with mercurial ointment. The calomel is to be repeated in the dose of a grain, or a grain and a half, with the eighth of a grain of James's powder, in the absence of vomiting, every four hours; and this plan ought to be pursued with punctuality, until the gums are sensibly affected. In case of urgent and continued sickness, which is often a perplexing symptom, recourse must be had to occasional injections of weak chamomile tea, or thin gruel with a little salt, so as to induce a more vigorous peristaltic motion of the intestines. The torpor of the alimentary canal is sometimes so remarkable in hydrocephalus, that the most active purgatives will prove inert; and children in this state will bear considerable quantities of mercury without any trace of its affecting the mouth, even where mercurial ointment is employed along with it, which is generally necessary, a scruple or half a drachm night and morning. When the calomel is disposed to pass off too rapidly by the bowels, a grain of the compound powder of ipecacuanha may be substituted for the antimonial, at intervals. The evacua-

tions from the intestines will often be found slimy, dark, and offensive; they should therefore always be attended to.

Diuretics are very precarious in their operation, but it may be expedient in a disease so alarming and often so desperate to give small doses of the tincture of foxglove, with some gentle cordial antispasmodic, after the lapse of the acute symptoms, in conjunction with a diminished quantity of the mercurial; three or four drops of this tincture, with ten or twelve of Hoffman's æther, may be taken in any aqueous fluid, or a small tablespoonful of camphorated mixture, every four or six hours. The blister need not be kept open above three or four days, as it is found better to renew the stimulus by a fresh application of it; and the nearer the part affected, so much the more effectual will this remedy be found; therefore if we gain the smallest encouragement, or remission of symptoms, it is advisable to have the head shaved, and to apply a full sized blister to this part, dressing it afterwards in the manner already pointed out<sup>35</sup>. We ought not to neglect, from the earliest attack of this disease, to devote scrupulous attention to the state of the

<sup>35</sup> The cold affusion of vinegar and water, applied with a sponge to every part of the head, has frequently produced unexpected relief.



infant's gums, and to lance any tooth that might be thought likely to require assistance. The diet must necessarily be simple, and entirely of the vegetable kind, unless towards the decline of the complaint, where there may be any obvious symptoms of debility, or particular languor of the system; nor should any portion of wine or malt liquor be allowed so long as the mercurial and antiphlogistic or lowering regimen are pursued.

There is no morbid affection during the process of teething that can be regarded in nearly so formidable a point of view as the present, none requiring more assiduous and prompt attendance; and the parent must not be too hastily led to form a favourable prognostic; for whilst she may be amused with a confident hope of the disease being subdued, the little sufferer may be momentarily snatched from her fond embrace. Curiosity might naturally prompt any anxious or zealous inquirer to ascertain the morbid appearances in those children who have fallen victims to this disease; indeed it is strictly a matter of duty, more especially as hydrocephalus has been frequently known to attach to certain families, and has then been termed hereditary. Where leave has been obtained to examine the body, a considerable accumulation of water has frequently been found within the ventricles or cavities of the brain, and



a highly distended state of the vessels distributed upon the pia-mater, or membrane immediately adjacent to this organ. Besides these morbid appearances of more obvious occurrence, the mesenteric glands, which are small bodies in their natural state, connected with the intestines, are sometimes found to be considerably enlarged and indurated; but which of these changes is the cause of the accompanying phenomena it may not be easy to form a satisfactory opinion, although either of them would certainly justify the treatment already prescribed<sup>36</sup>.

The other symptoms consequent to dentition are so complicated, and vary so much in the same subject according to the part affected, that their origin appears sometimes nearly unintelligible. It is not uncommon to find these appearances resembling the most dissimilar diseases of the human body: we observe diarrhoea, difficulty of breathing, convulsions, swelling of the lymphatic glands about the neck, symptoms imitative of fever, and in short almost every morbid appearance that can be described. In certain habits we are led

<sup>36</sup> The medical student will find valuable information on the subject of hydrocephalus in Dr. Cheyne's Essays; particularly as this author has pursued the morbid anatomy with a considerable share of industry, and has delineated the history and progress of the affection with much accuracy.

to remark a considerable degree of swelling of the feet and hands, at other times a secretion from the urethra in both sexes; symptoms which seldom require any particular deviation from the usual medical treatment prescribed at this period, and which generally disappear after the teeth have penetrated the gums. The fever is of the most irregular kind, coming on by paroxysms of very short continuance, but very acute, during the first hour of this illness the child being perfectly cool, and the next violently flushed, and intensely hot; and this is not nearly so fatal in its consequences as the attack of any vital part, or convulsions, which sometimes continue quite independent of the cause that first excited them, and at length destroy the patient. As the child advances in life, the different organs before affected appear gradually to lose their susceptibility to disease, becoming as it were in some degree independent, there not being now in the constitution that universal consent of parts,) whereby the danger of teething is ultimately more circumscribed. When this sympathy is partial, or confined to the alimentary canal, appearing in the form of diarrhœa, it is frequently better to do little or nothing medicinally, for fear of inducing some metastasis, or transfer of the diseased action, or of rendering the irritation more universal; we should therefore merely prevent its being

carried to excess. Opiates administered at this period are found in most cases highly injurious; if it be necessary to restrain the too copious mucous evacuations from the intestines, we had better resort to a starch injection, giving at the same time a little of the chalk julep, with a grain or two of rhubarb occasionally: and sometimes by the addition of four or five drops of ipecacuanha wine a determination will be excited to the skin, and the force of the circulation directed from the parts originally affected. Powerful astringents should scrupulously be avoided, particularly where the diarrhœa has become habitual, for infants have been known to die within a very short period of putting a stop to the diarrhœa. Gentle emetics, consisting of two or three grains of ipecacuanha, are frequently indicated in the course of the complaint, and are found to shorten the duration of the diarrhœa. Still this affection of the bowels sometimes continues so long as to weaken the infant exceedingly, recurring by paroxysms, which are more severe either in the night or through the day, the mouth becoming aphthous, and the anus excoriated or tender, whilst the progress of teething is somewhat uniformly going on. The liver often appears perfectly inert, secreting little or no bile, if we may judge by the evacuations, which are of a pasty consistence, or very foetid and slimy.



Under these circumstances recourse has generally been had to mercurial purgatives, and I feel a confidence in their safety and efficacy, where they are administered with care and discretion, from the peculiar and well-known influence of calomel on the digestive organs, which operates on many occasions without any increase of debility. Sometimes a less active preparation affords eminent relief, viz. the *hydrargyrus cum cretâ*, and this is less stimulating to the mucous glands of the intestines. Of this medicine three grains may be given to an infant ten or twelve months old every night, for the space of a week or ten days; and during its exhibition, some stomachic bitter, as the infusion of orange peel and quassia or colombo, with a few drops of aromatic tincture, may be employed twice or thrice a day. As the mercurial regimen may be required for a considerable period, or its continuance at least must depend on a variety of circumstances, we should allow certain intervals to elapse in the exhibition of this remedy, and afterwards employ the same or a larger dose every other night: this plan in conjunction with the light tonics already mentioned, should be pursued until some material improvement is effected, and thus we shall frequently succeed in restoring health, and in removing the diarrhœa. Exercise, however, and change of air, will accelerate the object. Very often, the

disease of the bowels disappears for a month or six weeks, and is afterwards reproduced by the child's cutting a fresh tooth; every attention is therefore to be given to the state of the gums, for on the new tooth appearing the child often experiences a natural cure of the complaint.

With respect to the fever simply, where no topical affection intervenes, the common saline mixture, as a palliative, is found to relieve many of the symptoms; and we may subjoin small doses of antimonial wine, such as three or four drops every five or six hours, according to the urgency of the febrile action. We may likewise exhibit two or three grains of calomel, as a cathartic, at proper intervals. As to the diet, whatever is given at this period, whether vegetable or animal substance, has frequently a tendency to become acid, from the imperfect function of the stomach; but upon the whole, milk is the most innocent, or thin panada, or biscuit powder, made into a proper consistence with equal parts of milk and water. As a general rule, it is advisable during the greater period of dentition to make some retrenchment in the usual quantity of solid food, and to increase the allowance of drink, unless the child is very weakly; or if it be still principally supported by the breast, it will sometimes be necessary to pay attention to the nurse's

regimen. Sometimes weak animal broth, prepared from lamb or veal, may be allowed, where the child is weaned, alternately with a vegetable diet, otherwise it is not necessary. In laying down general directions for so many anomalous or variable appearances of disease, it must be observed, that according to the violence of any of the local symptoms, especially exhibited by any important vital organ, as dentition corresponds in its phenomena in great measure with inflammation, the application of leeches will be sometimes highly useful in conjunction with other remedies, and may even supersede most of them.

When the lungs are violently affected with cough, and extreme difficulty of breathing occurs, provided these symptoms are discovered early, it may be expedient to open a vein in the arm; or where that cannot be accomplished (which is often doubtful), in order to abstract three or four ounces of blood as quickly as possible, the smallest sized common scarificator should be applied to the chest, and immediately after the loss of blood the plan should be followed up by a blister to the affected part. It is to be feared that the operation of topical bleeding by leeches or by cupping-glasses is hardly enough resorted to in acute cases in infancy, particularly in inflammatory affec-



tions; but the good effects of this practice are too conspicuous to require any further comment, especially in the croup, and in the early stage of peripneumony, or inflammation of the lungs. The truth is, that there is more danger of our giving way to a pusillanimous system of treatment at this period of life than of falling into the other extreme; either from the natural tenderness and affection which infants readily claim, or from too extravagant an opinion of their constitutional delicacy. This scrupulousness of conduct is on no occasion more apparent than in the reluctance too often displayed by the parent in yielding to the proposal of the simple operation of lancing the child's gums, which, when once resolved upon, should always be performed with freedom, employing the instrument for all the suspected teeth, in the manner already described.

It frequently happens that as this operation is commonly performed, it will be necessary to repeat it in the course of a few days; but it need not be imagined that the gum becomes callous or impenetrable to the tooth where the first incision does not immediately succeed, for all parts of the body that have been occupied by wounds or sores are much more disposed to give way, or yield to pressure, than original and sound parts: so that on this general prin-

ciple, each succeeding division of the gum facilitates the exit of the tooth, which is contrary to the popular opinion, and tender prejudice upon this subject.

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## CHAP. X.

### *On the Vaccine Disease.*

IT is almost impossible to speak in too high terms of a disease so truly mild and simple in its phenomena, which has already acted such a signal part in the salvation of mankind in every accessible quarter of the globe; and perfectly useless to enter into any long detail upon the subject, since it has undergone such minute inquiry, and is so universally intelligible with respect to its direct consequences to every class of society, whose prejudices have not hindered them from being made acquainted with it.

Although the cowpox took its rise from one of our most domestic animals, but little subject to disease in general, yet when received immediately from that source, it is far from being a mild disorder; the inflammation, pain, and irri-

tation, are very distressing to those who contract it by milking the animal so affected, but every subsequent infection proves milder: so it happens when the same person submits to reinnoculation from the human subject<sup>37</sup>.

There is a striking difference in the appearances of the vaccine pock, where it is communicated directly from the cow, and the same disease as it is propagated by inoculation in the human subject. In the former the pustule always assumes a faint bluish cast, the infected spots resemble at first the small blister of a burn, the pustule is completely circular, and depressed in the centre; as the disorder advances it becomes browner, and has a more purulent aspect. Shortly after the first eruption, tenderness and swelling are perceived under the arms, the whole constitution sympathizes, or receives the alarm, shivering, sickness, head-ach, and frequently delirium, supervene. The sores which are left after these symptoms subside have a great tendency to ulcerate and spread,

<sup>37</sup> It has been conjectured that the infection of smallpox originated from the camel, an opinion not very improbable when we advert to its original source in the eastern hemisphere; indeed, by domesticating other animals we not only render them more obnoxious to the causes of distempers from which their savage state exempts them, but their education amongst us proves a source of reciprocal contamination.



and heal very slowly ; but whatever may have been the violence of the symptomatic fever, it is followed by no eruption in other parts of the body<sup>38</sup>.

When we compare these symptoms with the progress of the same disease as it occurs in the usual mode of inoculation from the human subject, we shall be convinced that it is thus deprived of its original malignity ; although should it be succeeded by more numerous failures, it might be expedient to revert to the original source for communicating it, rather than risk the scourge of other pestilence : and we now find that it may safely be imparted in this way from the first month of infancy to the latest stage of life.

I think it right, however, to state, that I have twice witnessed very unpleasant effects from inoculation during the latter period of teething ; and as this interval may generally be suffered to elapse without material inconvenience, except in cases of immediate danger of exposure to smallpox, I consider it prudent to advise parents to forego in a general way the operation at this time : fever, and a tendency to ulceration, even abscesses in the vicinity of the inoculated part, have occasionally taken place.

To avail ourselves of the most advantageous

<sup>38</sup> In corroboration of this statement, the reader is referred to the treatise of Mr. C. Aikin, on cowpox.

period for communicating this virus, adopting that interval least obnoxious to cutaneous affections, we should not defer inoculation beyond the fourth or fifth month; after this term it is not unusual to find various eruptions in different parts of the infant, which might impart their peculiar action to the new disease, or weaken its influence on the constitution. It is a fact which daily observation will confirm, that the most trivial wound or scratch on any surface of the body during the prevalence of an herpetic or pustular ulceration, even that of tinea capitis, will immediately assume the unfavourable aspect peculiar to the original complaint; therefore it need not excite surprise if some deviation occur from the genuine or characteristic appearances of cowpox under these circumstances, or that the inoculated subject will be rendered in all probability less secure against the infection of smallpox.

In the vaccine distemper, it is a point of the first consequence to communicate the infection in a perfectly limpid state, and by no means to trust to the ichor after the ninth or tenth day; the characteristic appearances of cowpox cannot be anticipated, nor an equal degree of security against the subsequent influence of smallpox contagion; and a danger is increased of producing abscess, ulceration, and a considerable degree of general irritation. It appears also

very important to attend to the superficial manner of inserting the poison: scarcely any blood should be drawn, which may generally be effected by introducing the lancet in a horizontal manner; nor should we puncture the cellular substance, which is so liable to take on suppurative inflammation, and to derange the ensuing phenomena of the disease. Most inoculators introduce the vaccine virus by a single puncture into both arms; in very young children this is attended with inconvenience. I am of opinion, that it is preferable to perform the operation by two punctures about an inch and half asunder in the same arm; friction of the arm affected in suckling the child, which is sometimes apt to induce painful consequences, may thus be prevented: it is however rather a matter of convenience than of any real importance.

This disorder observes the following progress almost invariably where the genuine symptoms occur. About the fourth day from inoculation the puncture becomes slightly elevated and inflamed, resembling a pimple on the skin, gradually afterwards increasing in size, and surrounded by nearly a circular but irregular efflorescence. On the sixth day, seldom later than the seventh, a small speck is obvious in the centre, and an appearance like vesication commences, the vesicle being rather more elevated at the edges than towards the centre, the whole



in figure and breadth being equal to the common mallow seed. The circumference of the inflammation extends every hour till about the tenth day, but there are some cases in which but a slight sympathetic inflammation of the skin ensues, and without the greatest care this may be mistaken for a genuine case of cowpox: this is always liable to suspicion, and generally arises from the infection having been communicated after the ninth day, a period when the ichor is losing its activity. Where this neglect has not occurred, the peculiarity of diseased appearance may arise from some constitutional circumstance operating at that time; the subject however should always be re-inoculated at a more favourable period. The vesicle from its earliest appearance is perfectly destitute of pus, containing simply a pellucid ichor, provided ulceration has been prevented, a circumstance that occasionally proceeds from violent friction, or other accidental injury, or from too deep an insertion of the virus in performing the operation. As a mark of distinction, perhaps, it deserves to be mentioned, that in smallpox we uniformly observe a pustule more convex in shape than the vaccine vesicles, and in general bounded by a circumscribed zone of inflammation. As the fluid is absorbed, a change ensues not only in the characteristic appearances of the vesicle, but in the surrounding skin; a deeper blush succeeding,

around the inoculated part. The inflammation continues of a florid red aspect, with considerable induration of the integuments, till about the eleventh or twelfth day, varying in diameter from half an inch to two inches or more from the circumference of the vesicle, where it suddenly becomes darker, approaching ultimately to a mahogany shade of brown, and generally by the fifteenth day totally disappears; the scab being now the only remnant of the disease. Whatever general affection of the system arises from this poison (which is mostly so inconsiderable to a common observer, as to establish no criterion of its future anti-variola power) usually takes the lead of the sympathetic inflammation around the vesication: indeed it occurs very soon after the vesicle is completely formed. There is, however, the greatest consolation in knowing that vaccination affords incontrovertible evidence of its having produced some influence on the constitution, when the exact time of the vesicle arriving at its acme, coincides with the natural term of the disease. In this respect it agrees with the inoculated smallpox, which offers the same degree of certainty, or proof of its security against the natural disorder, even where no eruption follows, and of course no secondary fever; although in the latter such exemption from indisposition is very rare.

After this disease has completely passed

through its several stages, it is not necessary to administer opening physic : sometimes when the inflammation exceeds its usual rate about the tenth or eleventh day, it may be advisable to exhibit a dose of any active purgative, either calomel or castor oil; to do more than this can only be regarded as a matter of needless caution and superstition. The prejudice, however, in favour of drenching children with cathartic medicines towards the decline of this as well as many infectious disorders cannot be too severely reprobated.

Eruptive fevers all interfere with the progress of vaccination (with the exception of smallpox) whenever they are casually coincident, either rendering it altogether inert, or protracting the appearance of the inflamed areola till the fourteenth day or later, and sometimes the puncture entirely heals. Scarlatina, measles and varicella, and even the influenza, have been found to produce this effect.

As instances of failure in the action of the vaccine ichor have sometimes led to danger from smallpox contagion, it will be necessary to keep in view some of the obstacles to its success. There are several cutaneous diseases which occasionally render the vaccine experiment abortive by the substitution of an imperfect pustule. Those enumerated by Dr. Willan, who has furnished us with the most accurate analysis of this complaint, are herpes, including



shingles and vesicular ring-worm, the dry and humid tetter, the lichen, tinea, scabies and prurigo<sup>39</sup>; and Dr. Jenner is of opinion that an immoderate use of sulphur in the last cases will counteract the operation of the vaccine virus.

There are several interesting points which have been agitated respecting the consequences of vaccine inoculation on the system, that have given birth to great acrimony and prejudice, and which can only admit of satisfactory explanation from an extended series of impartial observations. Many persons have conceived an antipathy to this disorder as an ineffectual substitute for smallpox, or as an inadequate security against it; some will even be dissatisfied with the disease if it do not produce pain and sickness: the most sceptical, however, will now scarcely hesitate to allow the anti-variolous power of vaccination, in a very large majority of experiments, and far the greatest proportion of reputed cases of smallpox have been proved to be severe instances of chicken-pox. The most striking objects of popular animadversion have generally been certain anomalous eruptions said to have originated from the new inoculation, which have proved a very fruitful source of bigotry

<sup>39</sup> These disorders are defined and clearly elucidated in Dr. Willan's work on Cutaneous Diseases

and error; but which the numerous investigations of Dr. Willan and other practitioners of experience have sufficiently elucidated. Unfortunately, in nice points of inquiry, where scepticism ought most to prevail (and in no instance ought we to be more jealous of absolute decision than in tracing the connection between remote causes and effects), the mind is often disposed to embrace opinions with a conviction the most positive and premature. But the cause of truth does not suffer this question to rest upon the loose prejudices of those who are eager to decry the merits of so important a discovery; it is capable of being submitted to the test of evidence the most satisfactory.

Dr. Willan, who has written upon the subject of the vaccine disease, without any degree of unfair bias, and without any view to controversial reasoning, has availed himself of a great variety of opportunities to investigate the cutaneous affections subsequent to vaccination; and as a minute acquaintance with the phenomena of these eruptions can alone justify any decisive opinion respecting their origin, we may appeal to this authority with the utmost security.

That the vaccine virus can convey no other distemper has already been determined by experiments both in the canine species and by other animals independent of the human subject.

From the observations of professional men of the first eminence, who have neglected no opportunity to examine the different eruptions that have occurred subsequent to vaccination, it has appeared that no other cutaneous disease has ever manifested itself than what is peculiar to the human species independent of inoculation, and which has not been accurately described by various authors above a thousand years since. These are, lepra, dry and humid tetter, prurigo, nettle-rash, and strophulus candidus, but particularly dandriff, favus, crusta lactea, scald-head, and ring-worm, which are very correctly delineated and judiciously described in Dr. Willan's work on diseases of the skin. A strong fact in favour of the benignity of the vaccine disorder, as to its ulterior effects where the infection has been received immediately from the animal without passing through the human subject, is recorded by a gentleman of great eminence and experience at Gloucester, who states, that scarcely a more healthy description of human beings can exist than those who have suffered in the dairies from cowpox; and that not a single patient in half a century has applied to the infirmary for the relief of any local or constitutional disease, which any person could impute or trace to



vaccine infection<sup>40</sup>. An additional argument may be advanced that should have some weight at the present day, to induce those who are satisfied with the general result of vaccination, and who would not readily be biassed by any specious or unfair attempts to undermine its benefits and security, or even those who are yet wavering in judgment, to adopt it on grounds of safety and expediency alone: it can be proved incontestibly, that within the last two years an immense fatality has attended and still does attend the casual small-pox; and of those who have survived its ravages great numbers have incurred imminent danger from this loathsome disease.

<sup>40</sup> Willan on Cow-pox, 4to, p. 84.

## CHAP. XI.

*On Varicella, or Chicken-Pox.*

THIS disease, which, from its etymology alone, we should call minute smallpox, is not so common at a very early period of infancy; but it is too important to be overlooked, on account of its resemblance to smallpox, especially to the eruption of that disorder as produced by inoculation. In general, however, the difference between chicken-pox and smallpox is marked with sufficient clearness and precision. The fever generally takes the lead of the eruption, but is seldom very acute; there is not so much previous lassitude and debility in varicella, the tongue is far less furred; there is however mostly some affection of the stomach and head, and preternatural heat and flushing of the skin. Sometimes there is a very regular attack of all the symptoms of fever, which will go through the hot stage without terminating in perspiration. In young children it is more usual for the eruption to follow partially, beginning about the neck and breast, or back; then spreading over the face, but yet in a more distinct manner than the natural smallpox (where it often assumes a continued redness), and after-

wards it extends more universally over the head and extremities. The eruption is seldom ushered in by convulsions in infants, although this occurrence is not very unusual in smallpox. There are no symptoms of secondary indisposition after the vesicles have gone through their complete stage, nor does the disorder ever recur, or leave any disposition to either local or constitutional affection so far as is hitherto known.

Dr. Willan has noticed three varieties of this complaint, differing merely in the form and size of the vesication, each of which may sometimes be traced in the same subject ; but so far as the characteristic marks of difference between this disease and smallpox are necessary to be understood, they admit of easy description without any such subdivision. We may merely remark that the swine-pox, or hives, is a larger vesicle, preceded by the same symptoms, and generally occupying the same portion of time. Where the eruption is designated by a more globular form, although the base is not exactly circular, Dr. Willan has termed the variety *varicella globata*.

We seldom can perceive any remarkable change in the contents of the vesicle before it completely scales off in any variety of this disease ; but occasionally a pustule is obvious. To avoid mistake, although the terms vesicle and



pustule are used indiscriminately, we should observe that it cannot properly be called a pustule without containing pus ; the fact is, we sometimes observe a slight turbid appearance in the contents of the eruption, of a yellowish whey colour, but no opaque fluid as in smallpox, the vesication seldom penetrating below the cutis, or true skin. The essential particulars wherein it differs from smallpox are the small size of the vesication in most instances, its distinct mode of breaking out, and, in common chicken-pox, the circular defined figure of the eruption, as well as the more circumscribed extent of the areola, or surrounding zone of inflammation. The vesicles are generally covered with a brownish incrustation on the fourth or fifth day ; within that interval they are daily becoming flatter, fresh vesicles are succeeding the first eruption, which follow the same course ; whereas in smallpox the contents of the pustule seldom appear mature before this period, and there is no tendency to desquamation until the ninth or tenth day. There is frequently a tingling sensation, or itching about the vesicle in children whose skin is very irritable, which tempts them to rub and break it ; this would tend to mislead a practitioner were he to overlook the eruption in other parts, as by such treatment a degree of suppuration is apt to ensue, and the true characteristic form of the com-

plaint will be rendered more ambiguous. This disease leaves a coloured patch on the skin for a certain time, but no indentation. The early period of the eruption is attended in some cases with soreness of the throat, difficulty of deglutition, and in others with a short dry cough. Adults, upon the whole, appear to suffer more than children, but not from any symptom of danger. As it is a disorder universally mild in comparison with many other acute eruptions, no advantage has ever been gained by transmitting it by inoculation, and it has seldom been attempted, although it is very probable that it might succeed as an experiment to arrest the progress of hooping cough, and would be unquestionably an object of importance where the latter is unusually severe. Vaccination has been proposed with a similar view, and has been said to succeed, but I cannot affirm the truth of this assertion from experience.

As to the origin of chicken-pox amongst Europeans, whether it was coeval with the introduction of smallpox, to which it bears a remote affinity, or is one of those numerous diseases arising from luxury and local customs, are points which hardly admit of determination. From a difficulty in tracing the antiquity or identity of diseases that have for a long time had the same title, we are not so accurate in scientific arrangement as is strictly necessary; but in general,

researches of this kind are considered more curious than useful. The medical treatment of varicella is so simple and obvious to those who have attended to its natural history and progress, that it scarcely merits our investigation ; indeed, the majority of cases terminate favourably, without any other attention being paid to it than regulating the diet. The principal reason for reentering upon this subject was to give such a statement of the appearance of chicken-pox as to enable any intelligent person to discriminate between it and smallpox, as some very equivocal cases of the former have fallen under my observation subsequent to vaccination : and many are still mistaken for the latter, to the great prejudice of the new discovery.



## CHAP. XII.

*On Catarrh, accompanied with Inflammation of the mucous Membrane of the Lungs.*

ALTHOUGH the application of cold is followed by very simple effects in the majority of infants that have the advantage of good nursing and pure country air, yet we are frequently led to observe a very complicated train of symptoms in those of every class who are exposed to its influence under the local disadvantages of a city or large town, especially at those seasons when considerable vicissitudes of temperature prevail. Like a delicate flower from the conservatory when exposed to the first impression of the open air, children in the neighbourhood of the metropolis are readily susceptible of injury from sudden alterations in the state of the atmosphere.

Catarrh and that affection of the lungs which constitute the subject of the present inquiry are observed to be in some degree epidemic, and often fatal at the commencement of spring, and towards the end of autumn. They are found also to attack infants about the tenth or twelfth month, rather than at a later period, except in the instances of those subjects who at a more advanced term of childhood are highly irritable,

or naturally predisposed to inflammatory affections of the chest.

The precursory symptoms of this disorder are, heaviness about the eyes, with a watery discharge, and some degree of partial suffusion of this organ, pains about the forehead, frequent chilliness and considerable fretfulness, soreness of the nostrils, with a copious discharge of watery mucus, and sneezing, together with a sense of stuffing, or obstruction of the nose. As the complaint advances, there is a considerable flow of saliva, with tenderness, and some degree of tumefaction of the salivary or sub-maxillary glands. The breathing is hurried and laborious, with a rattling in the throat, and there is a frequent tickling cough, accompanied with a sound of hoarseness; but little or no expectoration in an early stage of the disease. The skin is often intensely hot, and seldom moist, with an appearance of efflorescence, alternating with paleness, or an unpleasant sallow hue; the tongue is loaded with a whitish incrustation, and the urine is often high-coloured. Where the affection consists of the foregoing train of symptoms, and the lungs discover only a partial sympathy, the infant generally recovers by the simplest mode of treatment; but frequently the disorder is marked by severe paroxysms of fever, and extreme rapidity of the pulse, by delirium, and considerable derangement of the alimentary canal, as

well as by symptoms denoting violent irritation of the mucous membrane of the lungs, although without any sign of acute pain. There are in this disease all the varieties imaginable, from the most partial to the most universal, from the most inflammatory to the least inflammatory, according to the cause producing the structure of the parts affected, the degree of universal or remote sympathy, or the constitution of the patient. If the disorder happens to interfere with the process of teething, a greater complication in the supervening symptoms arises, but often not less dangerous; this coincidence of events, however, ought to be scrupulously anticipated and investigated.

The principal points which ought to arrest our attention in this disease are the vitiated secretions from the bowels, and their great irregularity in most instances; as also the real nature of the cough, and shortness of breath, which must be distinguished from that of pleurisy by the absence of acute pain, or from real peripneumony, by the slighter quantity of fur upon the tongue, and the less striking symptoms of general inflammation.

The sleep which children obtain under the influence of this disease is very precarious, and is attended with twitchings and startings; the breath is not constantly laborious, but rather quick and panting, particularly at the time of



the evening paroxysm of fever; and there is almost always a rattling noise in the trachea, from the mucus continually secreted, but seldom expelled from the mouth. Although the affection of the breath sometimes rises to an alarming height, and the child is flushed, and often coughs with vehemence, yet from a series of minute observations directed to the progress of this disease, I am induced to consider the particular state of the digestive organs as the principal source of the irritation, and have almost invariably found the prospect of recovery to brighten in proportion to the return of the healthy functions of the alimentary canal: a circumstance which will clearly be characterized by a more favourable appearance of the *faeces*. Children labouring under catarrh, and this peculiar affection of the mucous membrane of the lungs, seldom require or will bear the shock of general blood-letting; but the application of leeches to the chest and region of the stomach, where we sometimes discover much fulness and tension, is followed by very beneficial effects. After this evacuation has been freely encouraged by warm fomentations, a blister will be found very useful in relieving the affection of the breath.

Although the foregoing treatment seems very obviously indicated, yet it is of subordi-

nate efficacy, without a prompt and active exhibition of calomel, with small doses of antimonial powder. It would appear that the lungs are eminently relieved, both with regard to the mucous secretion and oppression of the breath, and the fever mitigated, not only from the common purgative effects of the antimonial combined with the mercurial, which are often copious, but from an evident excitement of the hepatic function, which is plainly indicated by the evacuations.

The patient should commence with one grain of washed calomel, and one-sixth or one-fourth of a grain of antimonial powder, which should be repeated every four hours, until an evident remission of the acute symptoms ensues. Those who are but slightly indisposed will not require either so constant or so quick a repetition of this active remedy, but will sometimes derive early relief from small doses of nitre, or the common saline mixture at intervals of six hours. Where the cough only is troublesome, the general feverishness but trivial, and the expectoration very slight, a tablespoonful of the following mixture will be administered with good effect every five or six hours to children of the age of twelve or fourteen months :

R. Tincture of squills, twenty drops.

Tincture of foxglove, twelve or fifteen drops.

Syrup of white poppies, one drachm and half, or two drachms.

Sweet spirits of nitre, a drachm.

Almond emulsion, three ounces.

It is difficult to enforce any general rule as to the extent to which we may be warranted in pursuing the mercurial treatment; for this must depend on the continuance or aggravation of the acute symptoms, particularly the oppression of the breath, the heat of the skin, and general irritation, as well as dryness of the cough: when the latter becomes looser, and the skin relaxed, we may have recourse to diminished doses, and a less frequent exhibition of it. It will also be necessary to avoid exhausting the subject by too copious an action of the bowels, especially to guard against profuse evacuations; and we should direct but a very sparing allowance of diluting drinks, which would have a tendency to fill the stomach and blood-vessels, and thereby increase the difficulty of the blood's circulating through the lungs.

The temperature of the room should be as equal as possible, not much short of 65° or 70° of Fahrenheit; and the danger of suffocation, which is sometimes threatened by the copious secretion of mucus in the trachea, ought to be studiously prevented by occasional doses of oxymel of squills, or small doses of ipecacuanha, so as to induce vomiting in a slight degree.



The determination however to the bowels, which is so readily encouraged by the antimonial and mercurial medicine, will generally supersede the use of nauseating or expectorating remedies.

Where we have succeeded in removing the most formidable symptoms, which will generally be found to attach to the lungs, and the infant is able to bear the excursion, change of air ought to be earnestly recommended, especially a dry and sheltered spot, inaccessible to bleak north or easterly winds. Throughout the cure vegetable diet claims a decided preference, and scarcely any portion of wine can be administered with safety; but in the convalescent stage, weak animal broth may be allowed alternately with prepared arrow root or sago, or a small portion of isinglass in milk.

In the few unsuccessful cases where I have obtained permission to examine the bodies after death, very little satisfactory information has been derived. In those instances where I should have naturally been led to anticipate most mischief and derangement about the lungs, I have discovered only slight vestiges of it; but more or less the effects of inflammatory action in different parts of the small intestines, with partial adhesions, and considerable vascularity of their interior surface. Although it is seldom that any trace of actual inflammation of the mucous membrane continued from the

trachea to the cellular structure of the lungs is discoverable, yet we often perceive a considerable secretion of mucus of a purulent appearance in many parts of the bronchiæ, and external paleness and distension of this organ similar to what occurs after death from asthma.

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### CHAP. XIII.

#### *On the Croup.*

THE croup, although but rarely occurring in this country, and not strictly peculiar to infants, is marked by such a formidable train of symptoms, and is commonly so extremely rapid in its termination, that it appears to merit an earnest and attentive consideration. The earliest traces of this disorder are recorded in various parts of Germany; afterwards in Scotland: and, lastly, in the north-western parts of our own island. This disease specifically affects the larynx, and takes its title from a particular stridulous and wheezing or croaking sound, emitted during the act of respiration.

It is observed by a practitioner of some eminence, and who has had extensive experience in this malady, that at the beginning the sound of inspiration resembles the passage of air through

a piece of muslin<sup>41</sup>; afterwards the sound is like that of air issuing from a brazen tube<sup>42</sup>. In some instances the attack of croup is very sudden, and the previous indisposition but slight; in other cases it is preceded by a troublesome cough, by symptoms of fever, and suffusion, or redness of the eyes, accompanied with drowsiness. Occasionally the disease is ushered in by a severe paroxysm of fever, succeeded by great restlessness, and in very young children by convulsive startings, and propensity to vomit. It is however of the utmost consequence to observe, that although the complaint is truly inflammatory, the danger is not always to be estimated by the general affection of the system, for children have been sometimes known to sink under this disease where the local symptoms were principally manifest<sup>43</sup>.

The leading, and indeed truly pathognomonic<sup>44</sup>

<sup>41</sup> It is difficult, perhaps, to be reconciled to this simile, as expressive of the contrast of sound.

<sup>42</sup> See an interesting paper on this subject by Mr. Rumsey, surgeon, of Chesham, in the Transactions for the Improvement of Medical and Chirurgical Knowledge, vol. ii. p. 41.

<sup>43</sup> A striking case in confirmation of this fact is recorded by the author of the paper before alluded to, where it appears that but little constitutional indisposition was observable so long as the lungs were tolerably supplied with air, until complete suffocation ensued from the obstruction occasioned by the adventitious filmy membrane which invested the trachea, as far as its division into the right and left lobe of the lungs.

<sup>44</sup> That symptom, which when present, the disease is present, when absent, the disease is absent.



symptom of this complaint, is a peculiar affection of the larynx and trachea; the inner membrane is highly inflamed, a ropy, purulent discharge supervenes, the membrane loses its delicate and highly polished structure, and is invested by a copious exudation of coagulating lymph<sup>45</sup>. The patient's skin at the commencement is hot, but frequently relaxed; on the second day the tongue is mostly covered with a white crust, the pulse is very frequent, and somewhat hard: the urine is high coloured, a difficulty of deglutition is often experienced, and the child is disposed to apply its fingers to the mouth, as if desirous of extricating something that choked it.

Although some children discover a propensity to drowsiness early in the disease, yet very little comfortable sleep can be obtained; for they are soon aroused by the violence of the cough. The cough, though at first dry, becomes at the end of the second day looser, and occasionally a filmy mucus is expectorated, which relieves the present paroxysm, until the reproduction of a similar membranous substance ensues. The cough and singular affection of the breath which characterize this disorder are mechanically excited by the irritation con-

<sup>45</sup> It is rather remarkable that children are seldom affected by the croup before the period of weaning, nor after the ninth or tenth year of childhood.

nected with the derangement of structure already described, but these symptoms are sometimes alleviated during an increase of temperature of the surrounding air. The danger of suffocation in this disease is most strikingly denoted by the violent agitations of the whole frame, by a degree of swelling, and remarkable flushings of the face, together with great palpitation of the heart, and tremulousness of the pulse. The expression of countenance which is alternately livid and pale, is highly descriptive of the actual sufferings of the patient, and the eyes appear to be somewhat protruded from the orbits. The difficulty of breathing is tolerably constant, varying in proportion to the extent of the inflamed surface of the lungs and trachea, and the consequent impediment to the passage of atmospheric air; and the child is so much more strikingly indisposed towards night, that the disease is almost always marked by an evening exacerbation of all the symptoms. Where the alarming symptoms of suffocation have not been relieved within the first six or eight hours, the disease generally proves fatal about the third day. In some cases where expectoration is more readily excited, and the symptoms of general inflammation are less conspicuous, life has been protracted even to the sixth or eighth day, but these are very rare occurrences.

In the true croup, it has been found that recovery is more sanguinely to be expected, where the breathing is least sonorous, the fever most moderate, the cough early attended with expectoration, and the symptoms at intervals so slight as to denote evident remissions.

Some practitioners in their relations of cases of this disease have evidently confounded inflammatory and spasmodic croup, which is a reprehensible source of fallacy, and can only serve to divert our attention from the active and most efficient means of treating the genuine disorder; indeed, the phenomena of spasm and inflammation are so essentially different, as well as the progress and termination of the spurious croup, that the spasmodic affection ought not to be recognized under the same class.

Dr. Ferriar has laid down the following diagnosis<sup>46</sup>. 1st. "In the spurious croup the cough has not the shrill whining sound which marks it in genuine cases; it is hoarser, and the intervals are longer. 2dly. Respiration is not so much affected in the spurious croup, even where the cough becomes alarmingly violent, and the obstruction does not produce the sibilation peculiar to croup, but resembles more a common dyspnœa, or difficulty of breathing. 3dly. The spurious croup is not attended with the restlessness, trembling,

<sup>46</sup> Ferriar's Medical Histories and Reflections, vol. iii. p. 202.



and palpitation of the arteries which characterize the other. In the spasmodic or spurious croup the evening exacerbations are less striking, the distress and agitation of the patient in the worst periods are not nearly so forcible, the sleep is more tranquil, and the patient more frequently recovers, even where the complaint has been neglected for many hours."

Much contrariety of opinion has prevailed with regard to the most judicious and efficacious methods of treating the croup; and there is little doubt that the successful issue of the most skilful advice depends entirely upon its early application. From my own experience, confirmed by the testimony of those who have been most fortunate in relieving or curing the disease, I have little hesitation in asserting, that the principal object on the first attack, of real croup, is to anticipate the adhesive stage of inflammation, or the formation of the adventitious membrane lining the larynx and trachea; this is best effected by powerful means of depletion, by the abstraction of blood from the system, and from the part itself, and by a regular and frequent administration of mercurial and nauseating remedies.

In very young subjects bleeding from the arm is frequently inadmissible, but we may generally obtain blood by cautious means from the external jugular vein; and it should in-

stantly be resorted to where we are perfectly satisfied of the existence of croup. Not less than six or eight ounces (according to the age of the child, or violence of the attack) should be withdrawn, if possible, in a full stream, so as to induce syncope. Three or four leeches should afterwards be applied to the trachea, and a full-sized blister to the throat or chest, which may be kept open with mercurial ointment; but these remedies will by no means supersede general bleeding. An antimonial emetic ought to be exhibited at an early period of the disease; and afterwards gentle nauseating doses of antimonial powder, one-fourth or one-sixth of a grain with two grains of calomel, which should be repeated every two hours until the danger of suffocation and difficulty of breathing shall have in great measure subsided<sup>47</sup>.

In those cases where the membranous substance has been allowed to accumulate for want of very active debilitating means having been employed, although expectoration would appear to afford the most striking prospect of relief, yet few children escape. Where the difficulty of breathing has experienced but little abatement from the first recourse to bleeding, it will sometimes

<sup>47</sup> If we should not excite vomiting by the usual doses of antimonial wine or tartarized antimony, we may probably succeed with a mixture of equal parts of tincture of squills and ipecacuanha wine.

be necessary to repeat the operation to a somewhat less extent, according to the strength of the patient; indeed this symptom alone demands the most active remedy. If we should consider the patient incapable of submitting to a further loss of blood, we ought to repeat the emetic, so as to have a very decided effect, and apply the warm bath. To mitigate the cough, general uneasiness, and fever, the following mixture may be exhibited in the dose of a desert spoonful every four hours in conjunction with the mercurial plan already prescribed.

R. Tincture of foxglove, thirty drops.

Sweet spirits of nitre, one drachm and half.

Oxymel of squills, three drachms.

Syrup of white poppies, one drachm and half.

Almond emulsion, four ounces.

It is scarcely possible to place the indispensable necessity of the foregoing practice in too strong a point of view; and having succeeded in some formidable cases of this disease from an early attendance, by the mode of treatment here suggested, I feel no hesitation (notwithstanding the doubtful prognostic of ultimate success) in earnestly recommending it to the adoption of others.

The diet should correspond with the general object pursued in the medical treatment; it should consist entirely of vegetable food. No



solid aliment should be allowed, but milk and mucilaginous drinks may be sparingly administered at frequent intervals.

The temperature of the room is a point of the utmost consequence; it should be uniform, not below 65° or 70° of Fahrenheit's thermometer, and moderate relaxation of the skin should be encouraged. Where the acute symptoms have been arrested by active means, and much debility ensues, the infant must be gradually supported by weak animal broths and light puddings.

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## CHAP. XIV.

### *On Hooping Cough.*

THE hooping cough, although regarded as one of the most familiar, is perhaps one of the most intractable diseases of childhood, and has not hitherto been very successfully or scrupulously investigated. In attempting a definition of it, it may be termed a peculiar spasmodic affection of the diaphragm, lungs, and trachea, always originating from infection or from atmospheric contagion. It is very frequently epidemic in this city, and is known to

carry off a considerable number of infants, both here and in the country. When the infection was first introduced has not been at all ascertained. It certainly was not known to the Greeks or Romans, or to the ancient Arabian physicians; its origin therefore rests on the same doubtful authority with many other modern diseases<sup>48</sup>.

The hooping-cough frequently commences with fever, sometimes it begins with the insidious marks of common catarrh, with a discharge of thin watery rheum from the eyes and nose, and is soon succeeded by unusual affection of the breath, and occasional fits of retching. The fever is observed in many cases to continue with slight intermissions for three or four days before there is any appearance of the cough; and as this fever is often trivial, it has scarcely been attended to, and seldom regarded as an essential forerunner of the disorder. The cough that follows differs from all others in the shrillness of sound with which it is accompanied, and the quick recurrence of the spasms, which appear so violent as often to threaten instant suffocation. It is not improbable that the peculiarity of sound may be ascribed in some degree to the inflammatory tension of those parts about the glottis that are subservient to the voice.

<sup>48</sup> In France it first appeared early in the fifteenth century.

Considerable distress is frequently created in this disorder, from partial obstruction to the admission of atmospheric air to the lungs, which occasions a remarkable paleness of countenance, and a degree of lividness about the lips. By degrees the paroxysm declines, and leaves the patient composed for a considerable time, until another effort of a similar nature ensues. The diaphragm, the most powerful muscle employed in respiration, situated between the cavity of the chest and the abdomen, is often thrown into strong convulsive action, and the stomach from the pressure of the abdominal muscles becomes compressed, so that its contents are often entirely rejected; and not uncommonly this effect supervenes soon after stated meals, so that some degree of inanition and debility from reiterated vomiting are certain consequences, independent of the exhaustion created by the cough. The pulse throughout the whole course of the disease is in most subjects much quicker than usual, and often conveys a degree of hardness to the touch; but as the complaint wears off, it mostly denotes weakness, and is often tremulous. As the disorder becomes established, the cough is somewhat periodical, and the paroxysms are less severe. The acute stage varies in almost every subject, in some occupying five or six weeks, in others scarcely more than three, particularly



when the season is temperate; still, however, the symptoms are often sufficiently distressing to awaken our apprehensions, not merely on account of the cough itself, but its probable consequences, such as inflammation extending to the lungs<sup>49</sup>. This organ is exposed to the greatest danger from the violent agitation of the cough, particularly in very young subjects, from the fruitless attempt at expectoration, and sometimes a much worse disease is superinduced; those children who fall victims to it generally suffering from all the symptoms of peripneumony, or inflammatory affection of the chest<sup>50</sup>. The course of the disorder for the most part occupies three months, and this term, like the stated periods of other diseases, has seldom been prevented by any

<sup>49</sup> Children are sometimes affected by a very troublesome catarrh, which assumes the true spasmodic type, although not nearly so violent as the genuine hooping-cough, which terminates favourably in three or four weeks or even a less period, and has afforded no small triumph to nurses or irregular practitioners in having speedily cured a disease that has passed for hooping-cough.

<sup>50</sup> The inflammatory affection of the chest, sometimes observable in severe cases of this disease, resembles more, on the whole, peripneumonianotha, or spurious peripneumony, than real inflammation of the substance of the lungs; this organ is often discovered to have completely lost its cellular structure, and to be transformed into a dark, solid, inorganic mass, entirely from congestion of blood: and partial adhesions are found between the pleura, covering the lungs and chest.

medicine; and the cough which succeeds it proves frequently very troublesome for several weeks afterwards . The patient therefore may be destroyed not by the cough simply, but by a conversion of the disease into peripneumony, or pulmonary consumption <sup>52</sup>.

The younger and more robust infants frequently suffer earlier and more severely than others, and where it falls in with the period of teething the symptoms are often truly alarming, requiring the frequent application of leeches to the chest, the benefits of which are decidedly manifest in the early stage of this distemper. In some instances, particularly in delicate children, the severity of the paroxysms will induce convulsions, so as to render the treatment of the complaint very complicated, and the issue of the case extremely precarious, especially when the spasms recur frequently <sup>53</sup>. Adhesions between the pleura <sup>54</sup> and lungs not unfrequently follow

<sup>51</sup> It is generally conceived that the disease is deprived of the power of communicating infection after the termination of its acute stage, or by the end of the fourth or fifth week ; but this point is still undecided.

<sup>52</sup> In Stockholm, between the years 1749 and 1764, 43,393 children are said to have been carried off by this complaint.—*Rosenstien on the Diseases of Children*.

<sup>53</sup> A gentle opiate with some antispasmodic, such as syrup of poppies, with small doses of æther or compound spirit of ammonia, will be found useful and necessary under these circumstances.

<sup>54</sup> The membrane investing the whole inner surface of the chest, and reflected over the principal part of the lungs.

this disease, and in many cases a hectic weakness, with increased difficulty of respiration upon the slightest exposure to a keen atmosphere, so that it becomes highly important to attend to the temperature of the surrounding air ; and in case of removal, a warm and sheltered spot is to be preferred.

During the most acute stage of whooping-cough, children are frequently affected with severe paroxysms of fever for twelve or fourteen hours, the breath will be very much oppressed, the pulse accelerated, and the skin intensely hot and flushed ; these symptoms are soon relieved by the common saline mixture, with four or five drops of antimonial wine at a dose, sometimes by an active purgative, and the infant is left tolerably comfortable : at other times this increase of fever expends itself in twenty-four hours, without the interposition of any medicine.

Many remedies have been proposed, some of which have been much relied on for the cure of this disease, and have taken it often from the care of regular practitioners, though, in fact, it is sufficiently dangerous to merit serious attention. Peruvian bark, musk, tincture of cantharides, even arsenic, and various charms, have been employed with nearly equal effect. Recourse has also been had to volatile embrocations, and different antispasmodic remedies, but I have never seen them the least instru-



mental in curing or even moderating the complaint. The vapour of vitriolic æther impregnated with hemlock (which is obtained by macerating the dried leaves for three or four days or a week in æther, by which it becomes a saturated tincture), has been strongly recommended by Dr. R. Pearson, who says that he had derived considerable benefit in practice from the inhalation of this vapour; the only unpleasant circumstance attending it is a slight degree of sickness and giddiness, which, he observes, soon go off. He remarks, that children and even infants may be made to inhale this vapour by wetting a handkerchief with the æther and holding it near the nose and mouth; this plan, however, is not intended to supersede more active means, but to be resorted to in conjunction with these remedies in severe and distressing cases of the cough<sup>55</sup>.

The principal thing that can be proposed with any solid hope of advantage, is to avoid the accidental causes and symptoms of inflammation during the course of the complaint, and when they arise to employ the most active means for their removal; this may be accomplished by general and local bleeding with cupping-glasses or leeches, and afterwards by the application of a blister to the chest, which is found much more efficacious immediately after topical bleeding. Mucilaginous and oily medicines, such as the

<sup>55</sup> Medical Facts and Observations, vol. 7. p. 95—99.

common or almond emulsion, may likewise be exhibited with advantage during the use of the other means.

It is not unusual for hæmorrhage to happen either from the nose or lungs during the violent struggles of the cough; this symptom seldom portends any danger unless frequently repeated, but furnishes temporary relief where the accident does not amount to any considerable loss of blood. Much injury is often sustained by violent straining to cough, or by fruitless efforts to expectorate; and in infants the phlegm is frequently swallowed, or lodges within the wind-pipe: it is therefore necessary to administer frequently gentle nauseating doses of ipecacuanha or antimonial wine. The former of these medicines is to be preferred; forty drops or a teaspoonful of the wine is mostly found to be an adequate dose for a child within the first six or eight months, or two grains of the powder; after these periods it is often requisite to increase the dose, and some warm diluent, such as weak tea or gruel where the child is weaned, may be employed to facilitate the operation. This plan for the cure of hooping-cough was first brought into notice by the late Dr. Armstrong, and is entitled to a warm recommendation. Where the bowels are constipated with marks of weak digestion, two or three grains of calomel should occasionally be given, which will sometimes supersede the necessity of nauseating evacuants:



these simple remedies will be found extremely useful during the most acute stage of the cough, and will often prevent worse consequences. On no account should we be forward in the use of anodyne medicines, as they are called, to still the cough; the leading symptoms would be aggravated by this treatment, and the usual dose of laudanum given at this period of life seldom affords so much benefit as might be expected. If, however, we should be induced to try opiates, they should be allowed only in conjunction with some expectorant, such as tincture of squills, or a small dose of antimonial wine, whereby the secretion of mucus is not suppressed, and the process of breathing not so much endangered. Under these circumstances a professional attendant ought always to regulate the dose and combination of these medicines, as general directions cannot be advantageously laid down.

In the impure air of a large and populous town or city, doubtless the cough has not an equal chance of going off, or the patient of being rescued from the danger of those accidents that have been enumerated, which might frequently be averted by removing into the country. It would be vain, however, to anticipate any sudden cure by taking a journey into a purer air<sup>56</sup>; such change might principally be expect-

<sup>56</sup> It cannot be disputed, that in some few instances, the cough has been completely suspended by removing into the country.



ed to operate in restoring the exhausted tone of the system, but it is very doubtful whether this disease has ever been totally carried off by art, except from the introduction of another disorder propagated by inoculation: this has occurred with the small-pox, although it is scarcely to be encouraged with this view, and on the testimony of Dr. Adams, it appears to have been effected by vaccination.

As to the diet, and other points to be observed in whooping cough, where infants are weaned, farinaceous matter should be used rather than any preparation of animal food, except at the decline of the cough and acute symptoms, when sometimes a more liberal and restorative plan will be found necessary.

Children should not be exposed to severe frosty weather without pursuing some species of exercise, as the winter is universally the most fatal season for the invasion of this complaint. The chest and whole of the abdomen should be guarded with flannel, the bowels kept regularly open, and weak lemonade, or barley water, and toast and water given as common drink. Sometimes whooping cough and inflammation of the lungs are cotemporary epidemics; the winter of 1808 amply verified this remark, and all catarrhal affections and acute eruptive fevers were much influenced by the prevailing affections of the lungs. It is impossible to be too much on our guard

against so alarming a concurrence ; perhaps few periods have ever been more fatal amongst children labouring under hooping cough in the precincts of this city than the preceding winter. Throughout the continuance of this disease a considerable degree of flatulence and indigestion are often prevalent ; in some cases milk alone is found to disagree, the popular notion of its creating phlegm is however truly absurd ; but as a more appropriate substitute, tapioca or arrow root combined, with only a spare allowance of milk ; at other times thin cocoa or chocolate will be found very nutritious, the latter more particularly for those in more advanced childhood.

I have hitherto dwelt but little on the medicinal treatment of this disorder, except by the administration of occasional expectorant and nauseating remedies, for want of confidence in the peculiar efficacy of medicines. I think it necessary however to state from experience, that a combination of calomel, with the inspissated juice of hemlock, seems to lessen the violence of the paroxysms, and if cautiously persevered in, to mitigate many of the urgent symptoms of the disease. An infant at the sixth or eighth month should commence with half a grain of the soft extract of hemlock, and a quarter of a grain of calomel, which may be exhibited several times a day, in severe cases for three days in succession, gradually increasing

the dose of extract of hemlock to a grain and half or two grains twice a day, with the same or a larger dose of calomel, if necessary, taking every precaution not to affect the gums, and attending to the state of the bowels. Where the child has attained the second or third year, it may be adviseable to begin with half a grain of calomel, and an equal quantity of extract of hemlock, and to exhibit it at the same intervals as in the former period; the extract here may be increased with advantage after the first week or ten days, but it will scarcely be necessary to alter the dose of the mercurial.

Several practitioners of eminence have ascribed considerable virtue to small doses of arsenic for the relief of this disease, as it is prepared in Fowler's solution of that mineral; amongst these Dr. Ferriar and Mr. Simmons, of Manchester, have given it with advantage. The first dose is that of one or two drops of the solution twice a-day, and three or four may be given to a child of six or seven years of age, to be repeated according to circumstances. The dose of this medicine should be increased from day to day with extreme caution, and the use of it ought to be suspended for two or three days at intervals, and some gentle opening medicine interposed; otherwise it is not uncommon to witness very powerful effects from accumulated doses. This circumstance I have had occasion to observe, in ascertaining the effects of



the arsenical solution in the cure of intermittents; I would therefore be more induced to rely upon the extract of hemlock, which frequently proves a sedative where opium cannot be so conveniently administered. The fixed alkali, or salt of tartar, has lately been much extolled for its efficacy in cutting short this disease: the mode in which it has been prescribed is to give the patient from three to five grains of the alkali, according to the age of the subject, with two or three grains of powdered cochineal in some watery fluid, three or four times a day; but whether it possesses any positive virtue, or how far the complaint might have taken a favourable turn spontaneously in some instances, it is difficult to determine.

Preparations of bark are seldom useful, except in cases of real debility conjoined with small doses of tincture of squills and digitalis<sup>57</sup>; nor are the gum resin much better for young sub-

<sup>57</sup> When the intervals between the paroxysms of the cough are considerably prolonged, or the disease is somewhat periodical, with very little external mark of fever, the following medicine will be found sometimes very efficacious in restoring strength:

R. Decoction of Peruvian bark, four ounces.

Syrup of orange peel, half an ounce.

Tincture of foxglove, eighteen drops.

Tincture of squills, to a drachm, two scruples.

Of which mixture a tablespoonful may be taken twice or thrice daily.

jects; these stimulate or aggravate the affection of the breath more frequently than they are found to relieve the weakness. Mucilaginous and saline medicines appear to mitigate the cough in a more eminent degree; the almond emulsion, with one or two drops of laudanum, and three or four of antimonial wine, where there is no acute inflammatory symptom, will frequently shorten the paroxysms; but gentle emetics occasionally ought on no account to be omitted.

As the disease occupies a very considerable period, and produces great debility of the organs of digestion and of the system in general, although we ought not to be governed by any preconceived theory of its spasmodic or inflammatory disposition (a speculation too nice for general practice); still when the acute stage is terminated, some stomachic medicine will be found extremely serviceable: and when the disorder is in some measure regulated by periodical fits, in the intermediate time the good effects of this class of remedies will be more conspicuous. An infusion of chamomile flowers, with orange peel and colombo, or any other bitter possessed of but little stimulus, may be administered three or four times daily. Where pure country air, especially in the spring or autumn, is attainable, very often the tonic plan will be scarcely necessary.

It may be remarked, that this disorder, though very stationary, is not in itself formidable, but if neglected at its commencement may lay the foundation for much serious mischief; and from the mortality by which it is distinguished in our annual reports of the diseases of London, no doubt much ignorance and inattention are displayed in its method of treatment. There is however a peculiar reason, and a very forcible one in this country, for directing the attention of parents in a more especial manner to it, viz. the predisposition which it may leave to pulmonary consumption, which is entailed by many of those who in early life have suffered most severely from the attack of hooping cough. Notwithstanding, therefore, we are taught to consider it as a common disease, and one of equal popularity with any of those hitherto described; yet I am strongly inclined to awaken the attention of parents to its regular progress, and have taken a more minute survey of it than the subject has commonly been thought to deserve.



## CHAP. XV.

*On Intestinal Worms.*

ALTHOUGH the usual seat of this order of zoophytes (if we may so term them) is in some portion of the alimentary canal, both in the human subject and in other animals, yet there are other parts of the system where they have been occasionally discovered, where they have afforded no direct evidence by any local indications during the life of the animal, and from whence it would be vain to expect their dislodgment, viz. within the frontal sinuses of the head, in the lungs, spleen, and kidneys. There are certain diseased states of the body in many animals that appear highly favourable to the production and increase of worms, as particular cases of dropsy to the *tænia hydatigena*, the globular or oval hydatid; and the rot in sheep to the *fasciola-hepatica*, or common fluke: but in these instances worms are rather to be considered concomitants of diseases than a cause of them.

The natural history of the worms peculiar to the human body, so far as merely respects the discrimination of species (and this is the utmost information we can anticipate in the present state of physiological science), has been ably illustrated

by several German authors of high repute, whose works have long been difficult of access to readers in this country; particularly those of Gortze, Wrisberg, and Blumenbach. The public, however, is indebted to Dr. Hooper for a very satisfactory account of the four principal species<sup>58</sup>. These are the *ascaris lumbricoides*, or long round worm; the *ascaris vermicularis*, or maw-worm; the *trichuris vulgaris*, or long thread worm, which is a very formidable animal, and very rarely detected; and the *tænia solium*, likewise called *tænia cucurbitaria*, from disjointed portions of it resembling the seed of a gourd: this has something of the nature of a polypus.

The inhabitants of particular districts, or countries, are subject to another variety of *tænia*; those of our own island are affected with the *tænia solium* of Linnæus, and rarely with any other; whilst the natives of Switzerland are subject to the *tænia lata*. These animals are mostly hermaphrodites, and according to the result of Mr. Carlisle's observations<sup>59</sup>, the *tinæa* is oviparous, and appears to have a mode of increase precisely similar to polypi, each joint being capable of discharging the principal functions peculiar to the whole animal, which has been found on some occasions thirty feet in length, and composed of

<sup>58</sup> Memoirs of the Medical Society of London, vol. 5.

<sup>59</sup> See the Transactions of the Linnæan Society, vol. 2.

four hundred joints. The chance of an ovum being placed in a situation where it will be hatched, and the young find convenient subsistence, must be very small ; hence the necessity of their being so prolific, or of their being vested with a power of increase (if it may be so termed) by an addition to the number of their joints. The *ascaris vermicularis* appears to be oviparous ; but whether the long round worm, or the *trichuris vulgaris*, possess similar natures is very imperfectly ascertained. The natural situation of *tæniæ* is constantly found to be those portions of the intestinal canal named the jejunum and ileum, occupying nearly their whole extent ; the same applies to the *trichuris vulgaris* and *ascaris lumbricoides*, whereas the residence of the small thread worm is generally observed to be in some part of the rectum, or lower intestine. As the majority of these animals must from their situation and habits of life deprive the afflicted subject of a large portion of nutriment, by the absorption of chyle from the intestines, it is rather surprising that a more complete state of emaciation or inanition is not an invariable consequence ; this however, as we might reasonably expect, is more strongly exemplified in the cases of *tæniæ* and the *ascaris lumbricoides*, or long round worm, than in those affected by the *ascaris vermicularis*. Whether these animals ever engender in the cavity of the stomach is very



doubtful ; their being rejected sometimes by vomiting is no proof of it : yet when we consider that the larvæ of the *œstrus equinus* can subsist a great length of time in the stomach of the horse, it is not very improbable that worms could even exist, and carry on their ordinary functions in this situation in the human species, under similar circumstances of apparent inconvenience.

The symptoms that usually indicate the existence of worms in the intestinal canal are, a very irregular and frequently voracious appetite, itching of the nose, and some degree of tenesmus, though more particularly from the *ascaris vermicularis*; induration and permanent fulness of the abdomen; a pale, hollow, but sometimes bloated countenance, and frequently a semicircular duskish streak around the lower eyelids. Amongst other symptoms, we may notice pains of a spasmodic kind in some part of the belly, especially about the navel, great constipation, with alternate diarrhœa, and a copious slimy secretion, highly fœtid breath, and frequently foulness of the tongue, accompanied with nausea, imperfect sleep, gnashing of the teeth, and partial convulsions. Sometimes universal spasms occur, particularly in very young subjects ; and Dr. Underwood has remarked, that where the pulse is very small, attended with hiccough, it is almost a certain sign that the convulsions are excited by worms. Occasionally we trace some affinity between the

symptoms of worms and hydrocephalus, where there are irregular fever, violent flushes of the cheeks, frequent startings, and gnashing of the teeth, and picking of the nose; although the slow pulse, and dilated state of the pupil, the dark fœtid evacuations from the bowels, and general torpor attending the advanced stage of the latter, ought to remove all uncertainty<sup>60</sup>.

In most cases of worms we observe a sallow appearance of the skin, with quickness of the pulse, alternating with irregular flushings, and febrile heat at intervals, with a short teasing cough. The presence of ascarides is not always manifested by this concourse of symptoms; some degree of ulceration about the alæ of the nose, slimy evacuations, and universal emaciation, with a great degree of insensibility, or disinclination for the usual amusements, are frequently the chief characteristics.

As the *ascaris vermicularis* occupies the lower portion of the rectum, and irritates the internal membrane considerably, it is not unusual to discover it in considerable groups, enveloped by

<sup>60</sup> Dr. Home of Edinburgh, in his clinical experiments and histories, points out what he terms an infallible diagnostic symptom of worms, viz. an œdematous swelling of the alæ, or lower expansion of the nose, by which the apertures of the nostrils are very sensibly diminished, with a swelling of the upper lip, and often the contiguous parts of the cheeks. He adds, that this symptom has seldom failed to discover the existence of worms for a series of years past, and that it may faithfully be confided in.

gelatinous matter in the ordinary evacuations. Independent of the more obvious inconveniences resulting from worms, they induce occasionally the utmost irregularity in other disorders of the system, disturbing their usual progress, and giving rise to very equivocal, and sometimes formidable symptoms. We find them more incidental to children from two to four or five years of age, and to those of indigent families, partly owing perhaps to their general diet; and more peculiar to young subjects, arising in great measure from irregularity in their food, and want of proper discrimination in the choice of it. Sometimes the predisposition to worms appears entirely to originate from a weakness of the digestive organs; for although the digestion at this period of life is mostly rapid, still we find that it is sometimes capricious and uncertain.

With regard to the medical treatment of worms, it is perfectly simple, and tolerably certain in its effects. The most obvious indications of cure are to dislodge the animals, and the slimy matter in which they are enveloped. In some cases, the mere depriving them of life will be followed with obvious advantages, and some of the remedies that are commonly proposed would appear to effect this at least. The patient should be put gradually on a more generous diet, avoiding all noxious substances, particularly such as



are of a tough, stringy texture : and every plan should be pursued that is likely to strengthen the digestive organs.

The treatment of worms is often confided to irregular or empirical practitioners ; but it is necessary to observe, that many of the remedies employed are extremely violent in their operation, and some of them of deleterious composition, frequently exhibited through a mistaken opinion of the patient's case ; a circumstance that may be succeeded by very injurious consequences. I have frequently witnessed accidents of this kind, where the afflicted persons have contracted a strong prepossession of the existence of *tænia*, and have conceived it necessary to go through a regular course of quack nostrums, without the smallest evidence of worms, or mitigation of suffering : this is more apt to occur amongst the superstitious of the lower orders of society, where the judgment is easily led astray by the relation of extraordinary or miraculous cures, and who are very ready victims of error and delusion.

The most intensely bitter purgatives have usually succeeded in the expulsion of worms, not from their specific effects on the reptile, but probably from their stimulus in exciting a powerful action of the intestines. The articles frequently employed are aloes, coloquintida, rhubarb, wormwood, santonicum, &c.

Ponderous metallic medicines have occasionally succeeded, such as quicksilver, iron, or tin filings; the last of which is frequently found to be efficacious when other remedies have failed. Mercury is more uncertain as a vermifuge, except in the form of calomel, with scammony, and powdered senna; a composition which acts very powerfully as an expellent: from twelve to fifteen or eighteen grains or a scruple of the powder of scammony with calomel (of the London Pharmacopœia) may be given, from two to four years of age and upwards, quickening its operation with a draught of senna tea. Few of these medicines succeed in removing the tapeworm, but an empirical remedy has for some time been employed in France and other parts of the continent of Europe, which has frequently effected it, viz. the root of the male fern; from one drachm to two of this medicine in powder is directed to be administered early in a morning on an empty stomach; in early childhood one scruple or twenty-five grains would prove a sufficient dose, and within three hours an active purgative, half an ounce of castor oil, or a strong infusion of senna. The powder of tin has also succeeded in cases of *tænia*: about half a drachm or two scruples may be given to a child from three to four years of age, in any thick vehicle, twice a day, for ten days or a fortnight, occasionally interposing

four or five grains of calomel. There is, however, a manifest inconvenience attending the frequent use of purgatives, particularly when they have not been found efficacious in the expulsion of the worms, and the substitution of injections will then be found more expedient, especially where ascarides are prevalent; of these a variety have been recommended. An infusion of rue, about three drachms to half a pint of warm water, with a little oil and coarse sugar, or half a drachm of powdered aloes, with a drachm of tincture of asafœtida mixed in gruel, will be often found to succeed in removing them. Oil of turpentine likewise, blended with some mucilaginous substance, and given in the form of injection, will often supersede any further internal remedy<sup>61</sup>. The clyster should be repeated every other day until the desired effect is produced; and a dose of the compound powder of scammony, or, what is preferable, about fifteen grains of the powder of aloës with iron to a child of two years of age may be occasionally given in honey, in conjunction with the foregoing remedy.

<sup>61</sup> This medicine has been found very efficacious in removing tæniæ, and it is very probable that it would be found a powerful agent in destroying the long round worm; but it is rather too stimulating a remedy for any young subjects: small doses however might be repeated at short intervals, two scruples, or a drachm, each time, in gruel or honey.



To obviate the re-accumulation of worms, after a fair trial of purgative medicines, recourse should be had to some tonic ; indeed this may be administered with great advantage on the intermediate days. I have found the following preparation extremely advantageous in restoring the tone of the digestive organs, although, without doubt, others might be pointed out equally efficacious ; five grains of precipitate of iron, five of powder of columbo, three grains of powder of camomile flowers, five grains of prepared chalk, and one drop of essence of carraways. This composition for a child from two to three or four years of age, may be given twice or thrice a day in honey or jam. Where powders cannot so easily be exhibited, the following mixture will suffice :

Take of compound tincture of alöes, a drachm and half.

Aromatic tincture, two drachms.

Syrup of orange-peel, half an ounce.

Decoction of Peruvian or angustura bark, four ounces ;

A large tablespoonful for a dose three times a day.

Animal food should be allowed at least once a day, and a glass of port wine, if possible, after the principal meal ; the diet indeed should upon the whole be of the most nutritious kind-

## CHAP. XVI.

*On the remittent Fever, arising from a particular State of the digestive Organs of Children.*

THE disease which forms the subject of the present enquiry is known on the continent of Europe, particularly in Italy and Germany, under the title of gastric or mesenteric fever: it is not however peculiar to the term of infancy, although attacking very young children it manifests frequently considerable variety in its effects; is not wholly destitute of danger, and has been thought worthy of investigation on the present occasion. It is most likely to affect children from the fourth to the eighth year<sup>62</sup>, and has been particularly prevalent in the metropolis for the last ten or twelve years; and without doubt must often fall under observation of numerous practitioners in other large and populous towns. When my attention was first particularly directed to this complaint, which resembles in its exacerbations genuine fever, or, as Dr. Cullen has termed it, fever strictly so

<sup>62</sup> Dr. Pemberton, who has noticed this complaint in his work on various diseases of the abdominal viscera, includes even the first three years of infancy; this, however, has not fallen within my experience.

called, I thought it might be regarded as a species of that disease; but experience has since taught me to rank the disorder under the class of irregular dyspepsiæ<sup>63</sup>, in which the essence of it principally consists, accompanied with general feverishness, and considerable derangement of the nervous system. The disease never originates (as far as can be ascertained) from contagion; it has an acute and chronic stage, occupies many days, sometimes even weeks, before it announces itself by any decided character: but is not accompanied with that complete prostration of strength in the generality of cases so remarkable in fever of the continued type; and in general it remains longer, and with a more complicated train of symptoms, than the most protracted example of simple fever.

Before the author attempts to describe the phenomena, he will avail himself of this opportunity of acknowledging his obligations to Dr. Willan, under whose superintendence he has formerly treated the complaint, and who first pointed out to him its strong affinity to the apoplexia hydrocephalica of Cullen, or hydrocephalus internus. Dr. Butter has treated of this remittent with considerable ability; but the best modern author on the subject, so far as giving a concise and accurate history of

<sup>63</sup> A term employed by nosologists to denote indigestion.



the disease, is Dr. Pemberton, who has also confirmed its analogy to hydrocephalus<sup>64</sup>.

It would appear in many cases, that the disease owes its remote cause to a confined state of the surrounding atmosphere; particularly as its progress is certainly arrested on some occasions by removal to a more exposed situation, which, on the ground of prevention, is of some consequence to bear in mind. This remittent commonly manifests itself by the following symptoms: the child is for several days extremely peevish, sometimes remarkably drowsy, at intervals its skin is intensely hot, and dry throughout the greater part of the day, but more especially in the forenoon and evening, with a flushing of the cheeks, at other times particularly sallow and pale; the tongue is furred with a thin dirty white crust<sup>65</sup>. When the child is able to express its complaints, it generally refers us to the forehead, occasionally to the back part of the head, where it will sometimes describe, if not acute pain, yet considerable uneasiness throughout the whole course of the indisposition; and with this symptom we usually find remarkable lassitude, and incapacity to sustain the head in the erect position: the

<sup>64</sup> See his work on the various diseases of the abdominal viscera, second edition.

<sup>65</sup> Dr. Pemberton observes, that this organ exhibits its natural appearance, which contradicts my own experience.

patient likewise is troubled at intervals with a short teasing cough. In the absence of pain or fever the child never discovers any propensity to its ordinary amusements, but is mostly fretful, and irritable on the slightest occasion, or unusually dejected. The pupil of the eye is generally more dilated than in health, the pulse seldom falls short of 110 or 120, and is mostly small. The bowels are very irregular, fluctuating between costiveness and diarrhœa, though mostly inclined to the former; the fæces presenting a dark slimy, sometimes knotted, appearance, with a particular fœtor, not unlike that of hepatic gas. In some instances the disorder commences with considerable relaxation of the bowels, and the abdomen is peculiarly tender to the touch. The urine during the acute stage is high-coloured, and occasionally of a chocolate cast, but very rarely. I have noticed an appearance in this secretion in two or three cases, as if the red particles of the blood had been dissolved by putrefaction (in one instance the morbid appearance was obvious for two or three weeks), but without the effluvium peculiar to such a state. Within two or three weeks the urine deposits, on standing, a copious mucous and lateritious sediment, perhaps it resembles gelatine more than mucus; sometimes it discovers no precipitation, or at most a light flocculent cloud, and is

then of a pale straw colour, nearly resembling punch. Probably there are few diseases in childhood where a morbid alteration in the urinary secretion obtains in so great a degree as the present.

In the early stage of the complaint a very distressing and troublesome symptom is vomiting, and that constant irritability of the stomach where nothing can be retained, except perhaps toast water, or baum tea, requiring the infant to be perpetually confined to a horizontal position. In the second stage of the disorder the appetite returns, the tongue still discovers a fur, the feet are frequently puffy and sometimes œdematous, and the child is continually picking its nose or mouth. Occasionally, though very seldom, I have observed the child's thighs enormously enlarged and indurated, of a very pale aspect, not unlike the swelling of the lower extremities incident to women after delivery, together with soreness and tumefaction of the glands about the groin. When this symptom occurs it is attended with remarkable tenderness of the skin, not only of the parts affected, but of the entire surface of the body, indicative of extraordinary weakness. Very copious perspirations mostly accompany this period of the complaint, especially towards morning, but they are not to be regarded as critical, for during the day the skin is partially



relaxed and clammy. The increased irritability which in the acute stage was very notorious daily diminishes, except with regard to the fretful state of the patient's mind. The temperature of the skin becomes more uniform, and the tongue cleaner; the voluntary muscles are brought gradually into action; the evacuations, before highly offensive and destitute of bile, are daily improving; and the patient frequently betrays a voracious appetite. As the *fæces* resume their natural character, it is not unusual to observe a copious secretion of a dark orange, or bottle-green bile, entangled with a thick, ropy, gelatinous matter from the intestines.

Although this disease in some cases at an early period of life resembles hydrocephalus, yet this feature of the disorder is subject to variation: we often notice considerable determination to the head in affections of the alimentary canal; but here it is denoted by unusual heaviness of the head, constant stupor, and the utmost difficulty of being roused, a greater dilatation of the pupils of the eye, a more circumscribed flushing of the cheeks, a degree of delirium early in the disease, and fulness of the vessels of the eye. Screaming and occasional startings in the sleep, and great irritability of the stomach, characterize the early stage of this variety of the complaint. The state of the tongue and *fæces* corresponds with the appearances fre-

quently noticed in hydrocephalus; the urine, however, is much paler, and contains about the twelfth or fourteenth day a light flocculent cloud; the pulse is slower and more irregular than in the common fever of the remittent kind, and will even intermit. The depression of strength, and universal sense of soreness of the integuments, are more obvious in this form of the complaint. It may be proper to observe, that occasionally the fæces for many days resemble a stagnant muddy liquor, without any solid matter, as if some coarse powder had been mechanically mixed with the excretion; and in this state they emit a most disgusting fœtor.

Although the concurrence of symptoms which has been detailed may appear formidable to a person not familiar with the remittent fever, the prognostic in either form of the complaint is upon the whole favourable, which could scarcely be expected in genuine hydrocephalus under the most judicious treatment, and where the earliest attention has been directed to it: which would naturally lead to the inference that the actual effusion of water could not have occurred, notwithstanding the strong diagnostic features of that disease.

This disorder differs essentially from fever in this circumstance, that it depends throughout on a certain definite cause, viz. a vitiated secretion from the various glands subservient to di-

gestion, and consequent torpor of the whole alimentary canal, which being corrected or removed, health is gradually restored: whereas fever is a disease which continues independent of its remote cause, and has been proved to be insusceptible of increase from a concentrated application of recent infection, or of diminution upon withdrawing entirely the remote cause<sup>66</sup>, nor is it to be removed by a similar course of treatment.

It seems the more important to state the diagnosis, lest students should carry the analogy of the two diseases so far as to adopt the same mode of treating them; whereas the practice of administering antimonial and diaphoretic medicines during the acute stage of this remittent would only aggravate the patient's danger, and have no effect whatever in extinguishing the disorder.

If the reader have not already anticipated the medical relief which is pointed out in these cases, I would only solicit the indulgence of one remark, that the parent or practitioner would not abandon the cure to other more inert means, through a dread of entailing some direful evil on the patient afterwards, rather than employ mercury; a prejudice that we may be prepared to encounter on many occasions, but which the

<sup>66</sup> This argument is very ably supported in the late Dr. George Fordyce's work on fever.



improvement of medical knowledge must ultimately dissipate.

It is true that at the commencement of this disease an irritable state of the stomach, with frequent nausea, and not unusually relaxation in the bowels, would appear to contra-indicate the use of mercurials; these symptoms certainly require previous palliation, and the calomel may at first be exhibited, with a drop or two of laudanum. In the acute stage, whilst the vascular system is most excited and the head more or less affected, I am in the habit of employing one grain and a half or two grains of washed calomel night and morning for two or three days in succession; and to check the propensity to retching, which for a time is generally a most perplexing symptom, one or two drops of laudanum in the common saline mixture, with a little cinnamon or nutmeg water, should be administered every six or eight hours till the desired effect is produced.

Laudanum is to be regarded as a necessary auxiliary in obviating the extreme irritability of the stomach in the beginning of the acute stage; it not only removes much of the nausea, but lessens other symptoms of morbid irritability; and where it is even employed only in the night with a small dose of the mercurial, for instance, the combination of three or four grains of compound powder of ipecacuanha, or two drops of

laudanum, according to the age and irritability of the subject, with half a grain of calomel, it disposes the patient to sleep with more composure. The practice of blending an opiate with the alterative might seem contradictory *a priori* to the general character of the disease, to the heat of the skin, foulness of the tongue, as well as affection of the head during the existence of pain and tension, yet actual experience fully warrants its recommendation. The mercurial already pointed out should be exhibited in active portions until we have sufficient proof of a copious admixture of bile with the other fæculent matters; and to avoid the too frequent repetition of calomel, we may employ with considerable advantage an infusion of red rose leaves, prepared as directed in the *infusum rosæ* of the London Dispensatory, with two scruples or a drachm of Epsom salt every six or eight hours. Rhubarb, although preferable to many other purgatives, yet as being a strong colouring substance, and therefore liable to disguise the appearance of the fæces, should not be administered, nor any cathartic which might be likely to reproduce nausea; on this account jalap, or any other drastic purge, would be highly ineligible. It is perfectly clear that children will sustain the operation of extraordinary doses of mercurials where an adult would sink under them; but in this disease we have a remarkable confirmation of this fact, and there is little risque of affecting

the gums or fauces, whilst calomel has free egress by the ordinary evacuations. After employing three or four grains of the mercurial daily for a week or ten days, we may reduce the dose to a grain every alternate day for a week longer, and alternately a quarter of a grain at bed-time, interposing if necessary some stimulating cathartic, and we must take care to allow the patient at proper intervals a little beef tea or sago, with a moderate quantity of sherry or Madeira wine, but no solid nutriment should be allowed.

In conducting the cure of this disorder in childhood, if we except the casual appearance of delirium during the evening paroxysm in the acute stage, we are seldom embarrassed by any sympathetic derangement of the intellectual functions, or nervous sensations, so decided an obstacle at a later period, where the subject loses all confidence in recovery, and it becomes the principal drawback in effecting permanent relief. The state of the passions cannot fail to be influenced by bodily suffering at all ages, but we experience none of that anxiety and dismal anticipation of events in children, which communicate so unfavourable a character to dyspeptic complaints at a more advanced period of life.

Having given the mercurial regimen a fair trial, the precise duration of which must be submitted to the judgment of the medical attendant, as well as regulated by the particular cir-



cumstances of each case ; however empirically it may seem to have been urged, it is to be considered as the grand instrument in exterminating this remittent. The vital functions will have undergone such a temporary depression as to render it highly expedient to have recourse to some light aromatic and tonic medicine ; for this purpose we may give the following composition :

Take of colombo root, a drachm.

Angustura bark, two scruples.

Cascarilla bark, half a drachm.

Boiling water, ten ounces.

Take of the above infusion cold, four ounces.

Aërated kali, twenty-five grains.

Aromatic tincture, a drachm and half.

Mix ; and let the patient take a large table-spoonful, or more, three times a day. In a short time change of air will be succeeded with permanent advantage. The patient must return to his ordinary diet gradually, and avoid all unnecessary exposure to cold or moisture, which would tend to effect a speedy relapse ; but some kind of exercise, in a carriage if practicable, should be daily resorted to towards the decline of the disorder, or in the convalescent stage. For two or three weeks, or even longer, the child will discover no propensity for its usual diet, but will frequently subsist for that period on barley water ; sometimes it will be clamor-

ous for some very uncommon species of food, which, when presented, it will scarcely touch; we must not however think of oppressing the patient with such food as may appear highly palatable or gratifying to the stomach in health, his own instinct being the safest guide; for if not instantly rejected, it would hardly fail of creating considerable disturbance in the system. When spasmodic pains of the abdomen have been the subject of complaint in the early part of this disorder, a warm bath will generally be found efficacious; and a blister between the shoulders will afford great benefit in the alleviation of pain or other affection of the head; indeed, when excessive stupor and nocturnal delirium, with other symptoms of hydrocephalus occur, a repetition of the blister will sometimes be indispensable: but the previous application of leeches to the forehead or temples is more certain of success.

As soon as the intestines are freed from all redundant vitiated matter, and the various glands have resumed their healthy functions, which is capable of being decided by daily observation, the infant in general instinctively solicits nourishment of a solid kind, and as it recruits, we need not hesitate to supply it with moderation; but until this crisis arrives, a very slight portion of any dilute fluid substance at regular intervals will suffice, such as good bar-

ley water, plain toast water, arrow root, or milk and water.

Without venturing to indulge in any hypothesis or speculative reasoning, which would be quite foreign to the object of this treatise, I think it necessary to observe, that simple cathartics which act merely on the mucous glands of the intestines, such as powerful doses of neutral salts, jalap, scammony, &c. without appearing to exert any specific action on the liver, afford but little prospect of relief; on the contrary, there is danger of this class of purgatives producing tympanites<sup>67</sup>, and excessive weakness and irregularity in the future stage of the complaint.

Dr. Pemberton lays great stress on the consequences of this distension of the bowels with air, and in support of this idea appeals to Sydenham, and other authors of respectability. This symptom, however, rarely rises to any formidable height. The only inconvenience which has fallen under my observation, and that but in few instances, is anasarca, or a deposition of water in the lower extremities, which has yielded readily to the application of a flannel roller moistened with a solution of sal ammoniac, in the proportion of four scruples to half a pint of water, and the allowance of a

<sup>67</sup> Accumulation of air in the stomach and bowels, or flatulent dropsy, as it is sometimes termed.



small quantity of wine, together with the following powder three times a day: five grains of carbonate of iron, six grains of powdered colombo, four grains of angustura bark, and two of aromatic powder. Any other form of chalybeate would in all probability afford equal benefit, and may be substituted, should this composition disagree with the stomach:

Take of tincture of muriate of iron, fifteen or twenty drops.

Syrup of orange peel, three drachms.

Tincture of colombo, three drachms and half.

Spirits of cinnamon, three drachms.

Simple water, three ounces.

Mix—and administer a table-spoonful and half two or three times a day.

Provided the bowels continue inert during this symptom, an active cathartic, such as twelve or fifteen grains of the compound powder of scammony administered twice a week, in conjunction with the foregoing regimen, will have considerable effect in diminishing the swelling: but upon the whole this accident is of very rare occurrence.

## CHAP. XVII.

*On Rickets.*

BEFORE we enter upon any part of the history of this disease, a melancholy reflection arises, viz. that it seems principally confined to scenes of poverty and wretchedness, or to families where great uncleanness and bad nursing are known to prevail. The rickets was unknown in England, at least from medical record, till about thirty years before the time of Glisson, and was then conspicuous only in the western extremity of this island. In the country it is even now somewhat a rare occurrence; it is principally in cities or in large towns that we discover the most formidable instances of the disease.

The rickets occurs at a period of life when ossification has made but little progress, or before the bony superstructure has acquired any permanent arrangement; it is a complaint not peculiar to infants, but yet is more observable in them than in adults<sup>68</sup>. Its attack is sel-

<sup>68</sup> Sometimes, but very rarely, it has shewn itself after puberty, of which there is an example related by Monsr. Morand, a celebrated Parisian surgeon, in the Memoirs of the Academy of Sciences for 1753.

dom noticed before the ninth month, and it rarely commences after the second year of infancy, coming on very slowly in the intermediate time. In general its prevention is much more within the limits of our attainment than the cure, although we need not wholly despair of the latter. As far as concomitant appearances authorise us to account for its origin, the chief predisposing cause seems to consist in debility; and the more remote agents, uncleanness in food, person, and clothing, and a very impure air. Occasionally it discovers itself as an hereditary disease, chiefly on the side of mothers, and may very often be traced to the injurious practice of long suckling, where not even the shadow of any other remote cause can be assigned; of which, if professional delicacy would allow it, I could cite many striking examples.

It may however be observed, that where strict attention is bestowed upon the early management of infants, where they are diligently nursed, and accustomed to a frequent change of wholesome air, and where they are not weakened by any of the disorders that have been enumerated, it is seldom that the rickets manifests itself. Although this disease appears clearly to originate in weakness, it discovers very different symptoms from the usual weakness of adults, particularly in its consequences. The



child betrays commonly great languor of mind, and disinclination to exercise, or to exert any fixed attention; for although the ideas of children are not often placed on objects of great moment or are not very permanent, yet when in health we find the attention very earnest when directed to their ordinary amusements. The following are the peculiarities incident to this species of weakness; the bones do not receive a sufficient proportion of calcareous earth, consequently they yield to the weight of the body, and to muscular pressure; and we generally observe them bent in two directions. Long before the disease is fully established there is a protuberance about the wrists and larger joints of the body, as the knee or ankle; and an apparent thickening of the gelatinous part of the bone, as if to compensate for the deficiency of more solid matter. The muscles and common integuments are far more flaccid than usual. As the disease becomes more defined, there is general emaciation of the system, though the appetite is in many cases voracious, and food is taken in pretty largely. The head appears capacious in proportion to the trunk, and the superior fontanelle continues much longer open than in ordinary cases; but this is not an essential feature of the disease. Dentition goes on very deliberately in most cases, and the temporary or deciduous teeth hardly appear adequate to their proper

function: and although in most instances they preserve their texture, yet they frequently become loose from the softening of the alveolar processes. Where the disease assumes a more universal character, we find the ribs losing their natural convexity, the sternum or chest protruded forwards, and the capacity of the chest altered in every direction: occasionally there appears scarcely room to allow of respiration, but this mischief is more perceived as the child advances in growth. It is true that the bones do not continue to preserve the same proportional incurvation as life advances; that which constitutes a great bending in an infant is often a moderate inclination in an adult. The distortion, however, frequently proves highly injurious at a subsequent period, rendering the patient subject to difficulty of breathing, inflammation of the lungs, or some part of the chest, and to a variety of other inconveniences. The deformity, so far as it affects the spine, produces, as is well known, a very conspicuous feature throughout life. Where the spinal column of the neck partakes of it, the anterior portion projects, consequently the head is reclined, and in this case appears sunk between the shoulders. Those parts which are destined to sustain the greatest weight in the erect posture, and which require the most powerful muscles, are generally attacked by this disease; hence the legs and

thighs are more affected than the rest of the body.

It happens sometimes that not only a curvature, but some degree of inflammation arises in the bone, and true matter can hardly be said to be formed, but a kind of lymph penetrating to the skin, and making openings sometimes about the joints, ulcerating slowly, and with great difficulty. This symptom might pass for scrophula; but as it seldom extends to the lymphatic glands, it does not come properly within the definition; indeed there are various examples of scrophula without any trace of rickets, and conversely. In the worst cases of rickets, curvatures in several different directions occur in the spine, so that ultimately the child loses the power of performing any species of exercise, and gradually becomes totally averse to motion; at the same time the abdomen appears preternaturally tumid, or a quantity of serum is effused into the different cavities; in some instances hydrocephalus closes the scene. Occasionally a diffused œdematous swelling appears beneath the skin which is of a ~~mis-~~ *yellow* ~~taken~~ aspect; and although some degree of appetite for food remains, yet the small quantity of nourishment that the stomach admits is often hurried off by the intestines: the patient at length becomes highly emaciated, the pulse weak and tremulous, and ultimately falls a victim to the complaint.



Where the child escapes this complicated and formidable series of evils, and has the advantage of pure air, careful nursing, and some degree of early medical attention, the disease is sometimes arrested, or wears itself out; or it appears to influence but little ~~or~~ any of the important functions of life, although the distortion acquired in its previous stage continues more or less throughout its existence. However there is another light in which the disorder may be contemplated, and if possible, in a more melancholy point of view, where it has expended itself principally on the bony structure of the female pelvis, occasioning almost every possible variety of mal-conformation, and frequently involving the future safety of the mother and her tender offspring, should it ever be her fate to conceive.

In very distressing examples of this malady, whilst the body seems to be the seat of multiplied sufferings, we not unfrequently discover a premature sensibility of mind, and an earlier attainment of the powers of speech. But the mind advances with an uncertain progress after a certain term, the patient acquires considerable irritability of temper, and seldom reaches the common standard of human existence. Notwithstanding the rickets appears in many cases a local disease, or confined to the structure of the bones, yet from what has already been suggested with regard to the universal irritability of the

infantile temperament, we cannot wonder that remote parts of the system should sympathize with this affection. The digestive powers of the stomach and intestines are often considerably deranged; yet after the necessary means have been pursued to correct the excretions, we shall find that strengthening remedies are generally indicated; and in cases where it is practicable, the infant should try the effect of a purer air, a more nutritious diet, and as much exercise as circumstances will allow. When the powers of the child are too feeble to admit of its supporting the erect posture (and in different gradations of deformity of the spine this will occasionally happen), a light easy carriage should be constructed ~~on principles~~ to allow of some degree of loco-motion; or a swing might be made which would afford an opportunity for exercise with proper assistance, nearly in a recumbent position. With respect to the medical treatment of rickets, as there is a manifest deficiency of osseous deposition in those parts where it is essentially required, it might be thought easy, *a priori*, to introduce phosphate of lime into the system, either by itself, or loosely combined with other substances; and this idea has not escaped physiologists, but it is difficult to draw any favourable inference from the institution of such experiments: in fact, the morbid alteration

results from a certain change of action in the vessels themselves, wherein the function of ossification resides.

It has been asserted that a superabundant acid is generated in the body under the influence of this disease, which has led some persons to adopt simple alkaline remedies; but at present without any advantage in curing the complaint. The means most usually administered with various degrees of success come under the class of tonic, or strengthening remedies, such as ammoniated iron, or the tincture of this substance, which is a better preparation; the Peruvian bark in substance, or the decoction, with the extract: and different species of bitter remedies. Animal broths are to be substituted in lieu of farinaceous food, if the infant continues to suck much beyond the ordinary term; or allowing this species of support for twelve months in case the nurse is strong and healthy, still it should now be gradually weaned, supposing that the disease has occurred at an earlier period than usual.

Where we conceive it at all probable that the child might inherit the rickets on the side of the mother, it is far better to put it immediately to another nurse, or to maintain it by hand: either of these plans may have a chance of securing it, and preventing the disease from being so frequently transmitted to posterity,



The other cautions that respect cleanliness, &c. which have before occurred, cold-bathing, particularly that of the sea, and friction in the course of the spine and extremities, may afford essential benefit.

It is evident, however, that the foregoing regulations cannot individually be followed in poor families, who are too often the subjects of this disease; and unless institutions to favour this salutary design, with proper superintendants to enforce or carry into effect the necessary arrangements for the treatment of children under this complaint, were established near some maritime parts of this kingdom, accessible to a certain proportion of paupers in the metropolis, and large manufacturing towns, we must have recourse to other very precarious expedients, or be still doomed to commiserate a large and wretched portion of society, struggling for bare existence under every modification of this calamity<sup>69</sup>.

It is indeed to be lamented, when we look into the abodes of poverty, that the mother of a numerous family is mostly too intent upon

<sup>69</sup> At Margate and Bath there are hospitals conducted on the most benevolent and liberal principles, to accommodate different descriptions of infirm and lame persons afflicted with rheumatism or other chronic diseases, where the sea bath in the former, and medicated springs in the latter, are regularly provided.

various domestic or other avocations to bestow the requisite degree of attention on these unfortunate sufferers, so that they are commonly left to linger in extreme misery, or destined to supplicate relief from the cold hand of accidental charity.

In some few instances this disorder wears itself out spontaneously long before puberty, even by the end of the third or fourth year of childhood; but this is to be regarded as a rare and lucky occurrence. Where the rickets has made considerable impression on the constitution, manifested by swelling of the abdomen, and other alarming symptoms before enumerated, some diuretic, such as squills, with a small dose of either of the fixed alkalies, may be exhibited three or four times a day, and occasionally a dose of calomel. The tincture of squills in the dose of eight or ten drops very gradually increased, and four or five of aqua kali, should be given, with some light aromatic and bitter infusion. Should the general weakness and emaciation, together with the enlargement and tenderness of the abdomen continue, so as to induce a suspicion of the mesenteric glands being diseased, scarcely any regimen will succeed: but this is often conjectured only, and a false hypothesis, or an inaccurate diagnosis, might deprive the patient of any further chance of relief; whereas the art of medicine is principally concerned in prolonging life by

persevering in every reasonable effort, and we should never abandon hope in any of the diseases of infancy. The ammoniated tincture of iron, or the muriated tincture, should be given at first in doses of six or eight drops in water; but should either of these preparations disagree with the stomach or bowels, the ferrum precipitatum, or rust of iron, in doses of three or four grains for a child at three years of age, may be substituted, and joined with the same quantity or more of the powdered colombo: this should be given in jam, or conserve of orange peel, about three times a day. Although it is true that the advantage arising from alkaline or calcareous salts has hitherto been very limited, yet they deserve our attention on very obvious and simple grounds, and the application of them can be followed by no unpleasant effects. A physician at Paris has been very sanguine in his opinion of the efficacy of this remedy, and directs a powder composed of equal parts of phosphate of lime and phosphate of soda, to the extent of a scruple, twice a day in any aqueous vehicle. Together with these internal remedies (and what has been found to supersede them where the disease is local and of partial extent), it ought to be mentioned with the utmost confidence, that different mechanical contrivances have for some years proved very useful in reducing the bones to their proper



form, and in relieving the parts affected from the superincumbent weight of the body. It is to be observed, however, that the earlier such invention is adopted, the greater will be the prospect of its utility. The apparatus for this purpose requires considerable mechanical ingenuity, and some little anatomical knowledge on the part of the artist, otherwise they are liable to be of clumsy construction, and to irritate and incommode the subject, rather than to confer any benefit. The chief difficulty in executing our intentions, or in adjusting the application of machinery, is the risk of producing a new bend in attempting to remove the old one; and each particular case seems to point out the necessity of a different machine. It may require a considerable interval of time to discover the utility of these machines; nor should they be discontinued until the epiphyses, or rounded articular extremities of the long bones, are completed; which will seldom occur before the age of thirteen or fourteen, and perhaps in these cases even later. This restriction, nevertheless, applies more immediately to the severer examples of deformity; it may be dispensed with in slighter or more partial instances, where the patient is otherwise active and healthy.

To counteract the early deformity in the spine, a machine was invented some years ago.

by a French artist, Mons. Vacher; the result of whose experiments, as well as the particular construction of the instrument, are detailed in the fourth volume of the *Memoirs* of the Royal Academy of Surgery: this apparatus has since been improved by Mr. Jones. The principle upon which the machine is constructed is simply to preserve the head in an erect posture, and the spine in as straight a direction as it can possibly admit of in a diseased state, and to relieve the lower extremities from the superincumbent weight of the trunk and upper extremities. The invention in embracing the trunk differs very little from stays, except the addition of a collar; these are adjusted below to the two spines of the ilia, or haunch bones, resting upon two small bags, well moulded to the shape of the parts, in order that the machine may act without producing any excoriation or uneasiness.

We find that children affected with rickets naturally accustom themselves to some unfavourable inclination of the body, or peculiar position of the lower extremities; if left to themselves they are constantly in a stooping attitude, and with their legs crossed; this should be carefully attended to and discouraged. Nor should any great degree of exercise be allowed in the erect posture, where obvious increase of the distortion would necessarily

ensue, without the artificial aid before alluded to. It is highly probable that many infants are rendered worse on the first discovery of this disease, by encouraging their attempts, in some instances, to outstrip others in the early use of their feet; still the popular idea that they acquire the rickets by this premature species of exercise is scarcely worthy of refutation: it is our duty always to keep in view the more obvious constitutional causes, and the errors that may be contracted by a bad system of nursing. When we take into our account the latter circumstance, we should do well to recollect that the disorder appears to have originated in civilised parts of the world, to which it is still principally confined; for we have the testimony of Dr. Rush, in his inquiry into the natural history of medicine among the Indians in America, that there are no deformed Indians: and Mons. Vaillant, in his travels into the interior of Africa from the Cape of Good Hope, has confirmed the same observation, as well as the celebrated Mr. Bruce, in his natural history of the Abyssinians.



## CHAP. XVIII.

*Prolapsus Ani, or Descent of the lower Portion of the Rectum.*

IN children of relaxed constitutions, more especially where costiveness and diarrhœa alternately prevail, a portion of the bowel frequently becomes inverted, and if several folds of the intestine have descended, the sphincter muscle surrounding the lower portion of the rectum contracts powerfully upon the protruded part, occasioning pain, more or less discoloration, tenderness and inflammation, and if long neglected, the strictured parts run into gangrene. The protruded portion of intestine very soon assumes a darkish hue, is hot and extremely painful to the touch, and not unfrequently alarms the attendants, although it is very soon remedied; and indeed this state of the parts is easily prevented by a little early attention. In some cases this accident simply arises from a perpetual state of tenesmus and bearing down of the parts accompanying diarrhœa; every part of the lower column of the intestine becomes so much relaxed that a portion is inverted after evacuation, the sphincter losing all power of retention. In either of

these situations the principal indication is to return the protruded part, and if possible to counteract a relapse, but this is not so easily effected in the latter case as in the former. Before we attempt to describe the cure, it will not be improper to state another variety produced from intro-susception; one portion of bowel being received and confined within another, which seldom admitting of relief, mostly terminates fatally in a short period of time. In this form of the disease a higher portion of the intestine descends, and constitutes a more complete inversion; it takes place, however, sometimes from a part of the sigmoid flexure of the colon being involved within the lower column of the rectum, and is then discovered by its producing a cul-de sac, or blind pouch: in this instance violent contractions ensue, and efforts of propulsion at the same time, together with all the symptoms common to ileus, or inflammation of the intestines, from which it is difficult to distinguish it. Perhaps the best mode of rendering this accident intelligible is to adopt the explanation of Mr. Hunter, who was one of the first surgeons that described the mode of intro-susception. When it occurs downwards he denominates it progressive, and when it happens upwards, retrograde; the first is the most usual occurrence. The manner in which it may take place is, by one portion of a loose intestine

being contracted, and the part immediately below relaxed and dilated ; under which circumstances it might very readily happen by the contracted portion slipping a little way into that which is dilated, not from any action in either of these portions of intestine, but from some additional weight in the gut above. This anatomist further observes, that it is the outward fold alone which is active, the inverted portion being perfectly passive and squeezed down by the outer, which inverts more of itself, so that the angle of inversion is in this case always at the angle of reflection of the outer into the middle or inverted portion, while the innermost is drawn in <sup>70</sup>.

If the inverted bowel in the first recited variety should long have descended, and there be much tension in the part, a warm fomentation of poppy heads and camomile flowers should be applied frequently, and a weak solution of sugar of lead, with a few drops of laudanum, must be used lukewarm at intervals. Sometimes, although very rarely, the application of leeches will become indispensable, especially when the parts exhibit a florid appearance, and

<sup>70</sup> In proof of the actual state of these facts, as well as for a very distressing case of intro-susception, see an instance related by Mr. Hunter in the first volume of the Transactions of a society for the improvement of medical and surgical knowledge, page 108.



are much tumified. As soon as the swelling and tension abate, attempts should be made to return the bowel by a gentle but determined degree of pressure by the forefinger anointed with oil, or by the help of a small tallow candle. Where there is but little inflammation, as in the second variety, during the frequent recurrence of tenesmus, and when medical assistance is not immediately to be procured, a compress dipped in a mixture consisting of one part vinegar and three parts of water, applied for the space of ten minutes, gradual efforts being made at the same time to replace the protruded parts, will often completely succeed.

As this accident arises in most instances from universal relaxation, astringent tonics, occasional opiates, and the use of the cold bath will frequently be found of considerable service ; at the same time not neglecting to procure regular evacuations. Where it occurs in infancy from long continued diarrhœa, after returning the part, recourse should be had to a starch injection ; about a teaspoonful to four ounces of warm water, with the addition of five or six drops of laudanum. The child must be kept pretty constantly in a reclined position, and the breech and lower part of the rectum should frequently be kept moistened with a solution of sulphate of zinc in rose water, in the proportion of about two or three grains to an ounce ;

this application may always be retained effectually by a T bandage, and this should be very punctually attended to as a chief part of the method of cure. When the diarrhœa has subsided, a weak infusion of oak bark or Peruvian bark in lime water, or of galls, will sometimes, as an external application, prevent any further relapse; and the cold bath, or at least partial immersion, should be practised daily. At the same time the following medicine may be exhibited as a tonic :

R. Tincture of catechu,

Tincture of colombo, of each one drachm.

Paregoric elixir, twelve or fifteen drops.

Chalk julep, two ounces.

A small desert spoonfull for a dose three times a day.

In some cases it will be found necessary to repeat the opiate and starch injection once or twice a day, and to employ the proper suspensory bandage after the usual evacuations, interposing a small piece of sponge dipped in the solution of vitriolated zinc.

THE END.

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